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ABSTRACT

Early Childhood Research and Practice (ECRP), a peer-reviewed, Internet-only journal sponsored by the ERIC Clearinghouse on Elementary and Early Childhood Education (ERIC/EECE), covers topics related to the development, care, and education of children from birth to approximately age 8. ECRP emphasizes articles reporting on practice-related research and on issues related to practice, parent participation, and policy. ECRP also includes articles and essays that present opinions and reflections. The first part of this issue of ECRP contains the following major articles: (1) "Readiness for School: A Survey of State Policies and Definitions" (Gitanjali Saluja, Catherine Scott-Little, and Richard M. Clifford); (2) "Conceptualizing the Professional Role in Early Childhood Centers: Emerging Profiles in Four European Countries" (Pamela Oberhuemer); (3) "Language Development and Science Inquiry: The Head Start on Science and Communication Program" (Evelyn R. Klein, Penny L. Hammrich, Stefanie Bloom, and Anika Ragins); and (4) "Starting Child Care: What Young Children Learn about Relating to Adults in the First Weeks of Starting Child Care" (Carmen Dalli). The Observations and Reflections section contains the article, "Early Childhood Educators and the FIS Grant Program: An Interview with Naomi Karp." The Features section contains an article on the Project Approach: "The Hairy Head Project" (Barbara Gallick). The issue concludes with an ERIC database search on science education and young children, and a description of new ERIC/EECE publications and activities, along with general information and links related to the journal. (HTH)

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an Internet journal on the development, care, and education of young children

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Readiness for School: A Survey of State Policies and Definitions

Gitanjali Saluja, National Center for Early Development and Learning;
Catherine Scott-Little, SERVE; & Richard M. Clifford,
National Center for Early Development and Learning

Editors' Note:

Join us in an electronic discussion of this paper. The dialog box makes it easy to comment on the article, ask questions, or suggest additional considerations or implications. Selected substantive contributions will be listed by topic on this Web site.

Lilian G. Katz & Dianne Rothenberg

Abstract

Understanding the condition of children as they enter school can provide clues to help parents and teachers understand children's performance later in their school career. This information can also provide teachers with essential information for individualizing the curriculum to help children learn more effectively. Finally, assessment of the condition of children could be an important part of accountability measurement. This paper provides data on what states are doing with regard to defining and assessing the condition of children as they enter school, often referred to as readiness for school. Early childhood state representatives in each of the 50 states were contacted and interviewed regarding their state's policies on children's

readiness for kindergarten. Results indicate that as of January 2000: (1) age was the criterion most often used to determine eligibility for kindergarten, (2) no state had an official statewide definition of school readiness, (3) several states were studying the issue of school readiness, and (4) local school districts were often making decisions about how children should be assessed and how data on children should be used. Further research is needed to track changes in state policies over time.

Introduction

With the increasing demand for accountability and improved student performance that has swept the nation, policy makers and educators have struggled to find ways to assess children when they enter school. Understanding the condition of children as they enter school can provide clues to help parents and teachers understand children's performance later in their school career. Further, this knowledge can provide teachers with essential information for individualizing the curriculum to help children learn more effectively. Finally, assessment of children's condition at school entrance may play an important role in accountability measurement, because this information can provide baseline data against which future data on children can be compared. It should be noted that different assessment methods and instruments may be needed to accomplish these separate and distinct functions. The importance of positive early life experiences is widely recognized; however, questions about how to describe children at the time of school entrance through both formal and informal assessments have been the subject of considerable debate over the past decade.

In an effort to document the most current efforts to define and measure children's condition as they enter school, the National Center for Early Development and Learning (NCEDL) and SERVE (Note 1) partnered to complete a survey of readiness initiatives in all 50 states. This paper provides data on what states are doing with regard to defining and assessing children at school entrance.

Defining and Assessing Children's Status at School Entrance

Despite the recent attention that the topic of school readiness has received, there is still much debate on what it means to be "ready" for school. Parents, teachers, school administrators, policy makers, and politicians are all concerned about young children and whether or not they enter school "ready to learn." This concern has been especially true since the National Education Goals Panel adopted the first goal that "by the year 2000, all children in America will start school ready to learn" (National Education Goals Panel, 1991). Most people (Kagan, 1999; National Association for the Education of Young Children, 1988) argue that all children are ready to learn and prefer to use the phrase "ready for school." So what does it mean to be "ready for school?" Both terms appear to be problematic because of unintended consequences of presuming that children need to know certain things before they can enter school.

The majority of states determine a child's eligibility for kindergarten by his or her age. Although the date varies by state, most states allow children to enter kindergarten in the fall if they have turned or will turn 5 years old by a certain date. Table 1 displays the cutoff dates used by states to determine entry to kindergarten (Education Commission of the States, 2000).

Table 1
Cutoff Dates for Eligibility for Kindergarten

Date	States Using Cutoff Date
June 1	Indiana
July 1	Missouri
August 15	Alaska
August 31	Delaware Kansas North Dakota Washington
September 1	Alabama Arizona Florida Georgia Idaho Illinois Minnesota Mississippi New Mexico Oklahoma Oregon South Carolina South Dakota Texas West Virginia Wisconsin
September 2	Utah
September 10	Montana
September 15	Arkansas Iowa Wyoming
September 30	Nevada Ohio Tennessee Virginia Louisiana
October 1	Kentucky

October 15	Nebraska Maine
October 16	North Carolina
December 1	Michigan New York
December 2	California
December 31	Rhode Island Hawaii Maryland
January 1	Connecticut Vermont
Dates are determined at the local or district level	Colorado Massachusetts New Hampshire New Jersey Pennsylvania

Age is one characteristic that children generally have in common when they start kindergarten. However, when children are 5 years old, they vary greatly with regard to their physical, social, emotional, and cognitive development. The National Education Goals Panel (Kagan, Moore, & Bredekamp, 1995) has established five dimensions in which children vary and that contribute significantly to children's success in school. According to the Goals Panel, school readiness should be thought of as having at least the following dimensions:

- Health and physical development
- Emotional well-being and social competence
- Approaches to learning
- Communicative skills
- Cognition and general knowledge

Although most researchers, educators, and policy makers agree that these dimensions are essential elements of readiness, there is some debate as to whether these dimensions are exhaustive (Meisels, 1999). Further, individuals vary with regard to what they believe should be included as indicators of the standard to be met on each of these dimensions.

Although the five dimensions guide us with regard to what we should measure, the question of how to measure these domains remains unanswered. Assessing preschool-age children is challenging. At this age, children's development is rapid and uneven, and their development is greatly impacted by environmental factors such as the care they have received and the learning environments they have experienced. Furthermore, typical standardized paper-and-pencil tests given in later grades are not appropriate for children entering school (Shepard, Kagan, & Wurtz, 1998).

The demand for standard methods to document children's readiness has become increasingly strong despite the difficulties in assessing young children... A number of organizations have developed policy statements to outline how children should be assessed. Six professional organizations (Association for Childhood Education International, Association for Supervision and Curriculum Development, International Reading Association, National Association of Elementary School Principals, National Council of Teachers of English, and the National Association for the Education of Young Children) issued a joint statement in 1986 discouraging the use of "rigid, formal pre-reading programs" and standardized testing for preschool-age children (International Reading Association, 1986). In 1987, the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE) issued a position statement titled "Unacceptable Trends in Kindergarten Entry and Placement." NAEYC and NAECS/SDE joined together to issue a position statement on appropriate curriculum and assessment for children ages 3 through 8 in 1990, and the National Education Goals Panel published "Principles and Recommendations for Early Childhood Assessments" in 1998 (Shepard, Kagan, & Wurtz, 1998). NAECS/SDE updated and reissued the position statement in *Still! Unacceptable Trends in Kindergarten Entry and Placement* in 2000.

Taken together, these position statements indicate that readiness assessment should

- Benefit children and the adults who work with children
- Be used for the purposes for which it is designed
- Be valid and reliable
- Be age appropriate, using naturalistic observations to collect information as children interact in "real-life" situations
- Be holistic, collecting information on all developmental domains (physical, social, emotional, and cognitive)
- Be linguistically and culturally appropriate
- Collect information through a variety of processes and multiple sources (collection of children's work, observations of children, interviews with children, parent reports, etc.)
- Be used to guide instruction and not to deter a child's placement in school

There is agreement that school readiness is a two-dimensional concept and that both elements of readiness are equally important: in addition to children being ready for school, schools need to be ready to receive all children. The National Education Goals Panel has identified *ready schools* as a critical element of Goal 1. Further, the Ready Schools Resource Group of the Goals Panel (Shore, 1998) has outlined "Ten Keys to Ready Schools." Included in these "Ten Keys" are the following: "Ready schools should have strong leadership, strive for continuity between early care and education programs, promote smooth transitions between home and school, be committed to the success of *every* child as well as every teacher and adult who interacts with children at school, use approaches that have been shown to raise children's achievement and then alter practices and programs if they do not benefit

children."

Trends in Readiness Assessment

With increasing demand for accountability in the preschool and early school years, defining and measuring readiness have become even more important in the past decade. States have been left to develop their own frameworks, with guidance provided by the National Education Goals Panel, NAEYC, and other national efforts.

State-level efforts to assess children's readiness can best be described as a pendulum swinging from standardized measures that did not meet the above principles in the mid-1980s (Gnezda & Bolig, 1988) to limited readiness testing in the mid-1990s (Shepard, Taylor, & Kagan, 1996). In the mid-1980s, many states had requirements for standardized testing for children prior to kindergarten or first grade. Gnezda and Bolig (1988) conducted a national survey of early childhood specialists and testing and evaluation specialists in state departments of education to gather information on pre-kindergarten and kindergarten testing. Nineteen states mandated that children be screened, and 7 states mandated "readiness" testing upon entry to kindergarten. Confusion between screening and readiness testing was reported by a number of respondents. Results from both screening and readiness tests were, in several instances, being used to delay school entry or place children in special programs. Six states mandated and 37 states reported local districts using first-grade readiness testing. In 35 of these states, assessment results were used to determine children's placement at the end of kindergarten.

In the early 1990s, states began to move away from readiness testing, perhaps as a result of the concerted efforts to outline the principles for appropriate early childhood assessment described above. Shepard, Taylor, and Kagan (1996) conducted extensive surveys between May 1995 and August 1996 to determine states' early childhood assessment policies and practices. Telephone interviews were conducted with early childhood coordinators and state testing directors, Part H and IDEA coordinators, Title I coordinators, Head Start directors, and Goals 2000 contact persons. Their sample included in-depth interviews with at least one person from each of the 50 states and the District of Columbia.

This study found that most states had made efforts to move away from readiness testing by developing policies against the use of readiness testing, issuing publications on appropriate assessment in early childhood, or providing professional development opportunities on early childhood assessment. However, a number of states reported that local districts continued to use standardized testing with young children. A number of states mandated formal screenings for every child to meet the federal IDEA requirements for a plan whereby children with disabilities can be identified. Many states reported efforts to clarify the difference between readiness testing and screening, and how screening results should be used. While Gnezda and Bolig (1988) found frequent examples of special education screening

measures being misused to make decisions to delay school entry or plan instruction, respondents to Shepard, Taylor, and Kagan's survey indicated that this type of misuse was less frequent but still common.

Shepard, Taylor, and Kagan (1996) also found that some states and local districts were moving to new forms of assessment in the early grades. Respondents indicated that there was less readiness testing and increased use of teacher observation assessments such as the High/Scope (1992) Child Observation Record (COR) or the Work Sampling System by Meisels (Meisels, Jablon, Marsden, Dichtelmiller, & Dorfman, 1994). These efforts to support individualized instruction were, however, mostly concentrated at the local district level. Few state-level assessment programs had been developed to support instruction.

It seems as though the pendulum of assessment policies had swung from widespread use of readiness assessments and other instruments in the 1980s to fairly limited use of readiness assessments in a few states in the 1990s. To determine where the assessment pendulum had moved toward the end of the 1990s, NCEDL and SERVE conducted a follow-up study to collect information on how states are defining and measuring readiness.

Method

Study Purpose

The purpose of the study was to report on current readiness assessment efforts in all 50 states. We were interested in learning how states have defined readiness and what approaches they were using to measure readiness. We were fully aware that readiness activities were a "moving target," with policies in some states changing within a few months' time. Description of policies at the time of the interview may not reflect the most current information on policies and practices in each state.

Sample

Data were collected from a total of 71 respondents from October 1999 through January 2000. We interviewed at least one individual in each state. We began by contacting the early childhood state specialist in each state Department of Education. We obtained these names from the directory of the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE). For those states not represented in the NAECS/SDE directory, we called the state Department of Education and asked to talk to the individual most familiar with the policies regarding the education of young children.

Procedure

Data were collected through phone interviews. SERVE enlisted the assistance of four other Regional Educational Laboratories (AEL, Northwest Regional Educational Laboratory, Southwest Educational Development Laboratory, and Laboratory for Student Success) to collect data. The regions of the country were divided so that each lab collected information in their own regional area, and SERVE and NCEDL collected data from the remaining regions of the country.

To make initial contact in each state, we sent each state representative a letter explaining the purpose of the study and a copy of the interview questions. In the letter, we explained that we would be calling them to conduct a phone interview using the enclosed questions. In some cases, the initial contact person in a state suggested that another individual be interviewed instead. In states where there was more than one individual with knowledge of state policies, we conducted multiple interviews. To ensure content validity, interviewers provided each respondent with a summary of his or her interview. At this point, respondents were able to make changes or corrections to their interview data. Once these alterations were made, the responses were emailed to a project coordinator and organized into a large matrix.

The matrix was placed on a private Web site that only the respondents and project staff could access. After viewing their responses and the responses of those from other states, respondents had another opportunity to make changes to the data from their state. This step spurred some to make additions based on what others had included. After the verification process was complete, we examined the data by question, searching for common themes.

Instrument

The following questions were asked:

- How does your state define school readiness (readiness for kindergarten)?
- How does your state measure school readiness?
- How do you use the data that you obtain on school readiness?
- How do you deal with assessing children with special needs (children with disabilities, limited English proficiency, behavioral and emotional problems, parents with limited education and/or economic resources)?

Is there a systematic way of pulling these data together at the state level? If so, please describe this process.

Results

This section reviews the results of the survey related to each of the five questions.

How Do States Define School Readiness?

No state has a formal, statewide definition other than an age of eligibility requirement. Five states (Illinois, Colorado, Oklahoma, Pennsylvania, and South Dakota) stated that local districts may have formal definitions of school readiness. Five states (Alabama, Arkansas, California, Connecticut, and Mississippi) reported that they have developed frameworks or benchmarks to describe school readiness. Three of these states have created frameworks that align with broader state frameworks. Further, 6 states (California, Indiana, Kansas, Minnesota, Ohio, and Wisconsin) stated that they believe that states should place emphasis *on schools being ready for all children*.

How Do States Measure School Readiness?

States vary with regard to measurement of school readiness. Thirteen states responded that they conduct statewide screening or assessment when children enter kindergarten (see Table 2). In addition to these 13 states, 5 states require statewide screenings or assessments, but local school districts decide how to conduct them. Some of these states provide guidelines that districts must follow, while other states allow districts to follow their own guidelines. Twenty-six states responded that they do not mandate any readiness assessments, but local districts may choose to assess children prior to, or as they enter, kindergarten. Sixteen states currently have readiness assessment initiatives in place, with task forces, committees, or state agencies mandated to develop a plan for readiness assessment or assessment systems under development or being piloted. Finally, 6 states indicated that they do not assess school readiness. Some states, such as Nebraska, have made this decision for fear that the process of assessing readiness may be harmful to children (see Table 3).

Table 2
State Efforts to Assess Pre-kindergarten and Kindergarten Children

State	Type of Assessment/Screening
Alabama	Alabama Learning Inventory <ul style="list-style-type: none"> Administered by teachers to every public school kindergarten student within the first 4 weeks of school Measures pre-reading and quantitative concepts Information used for instructional purposes Data compiled at the local and state level
Alaska	Alaska Developmental Profile <ul style="list-style-type: none"> Global measure used to provide summary information on each school to the state Department

	of Education
	<ul style="list-style-type: none"> • Districts decide how to gather the information • Information will be used to determine patterns and identify areas with high need
Arkansas	<ul style="list-style-type: none"> • Health and developmental screening is conducted on all children entering kindergarten
Florida	<ul style="list-style-type: none"> • All children entering kindergarten are assessed by their teachers within the first 3 weeks of school • Local districts can decide upon instruments, as long as they measure the 16 indicators outlined by the state Department of Education • Information is used to guide instruction
Louisiana	Kindergarten Developmental Readiness Screening Program <ul style="list-style-type: none"> • Every kindergarten child is screened within 30 days of the first day of school (before or after) • One of four state-identified instruments may be used • Information is used to guide instruction but is also collected at the state level
Maryland	Work Sampling System <ul style="list-style-type: none"> • Data used as a school improvement device and for instructional purposes
Minnesota	<ul style="list-style-type: none"> • Early childhood health and developmental screening
New Mexico	<ul style="list-style-type: none"> • All children undergo an initial screening upon entry to school
New York	<ul style="list-style-type: none"> • All children are screened for health; English proficiency; and motor, cognitive, and language development
North Carolina	<ul style="list-style-type: none"> • Early childhood health and developmental screening
Ohio	<ul style="list-style-type: none"> • Teachers collect data on children in preschool programs through naturalistic observations • The Galileo computer system is used to aggregate data • Information is used for program accountability
Tennessee	<ul style="list-style-type: none"> • General screening is done (usually the Brigance is used) of all students entering kindergarten • Information is used to guide instruction

Utah

- All kindergarten children are assessed during the first 2 weeks of school
- Information is used to guide instruction

Table 3
State Policies Regarding School Readiness Assessment

Readiness Assessment Policies	Number of States	Names of States
State conducts screening or assessment	13	Alabama, Alaska, Arkansas, Florida, Louisiana, Maryland, Minnesota, New Mexico, New York, North Carolina, Ohio, Tennessee, Utah
Local schools conduct screening or assessment	5	Florida, New York, Oklahoma, Oregon, Texas
Some local school districts conduct assessments	26	Arizona, California, Colorado, Connecticut, Georgia, Idaho, Indiana, Kentucky, Maine, Massachusetts, Michigan, Missouri, Montana, Mississippi, Nevada, New Hampshire, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Carolina, South Dakota, Washington, West Virginia, Wisconsin, Wyoming
State is developing plans to implement statewide readiness assessment	16	Delaware, Florida, Hawaii, Kansas, Kentucky, Michigan, Missouri, Montana, New Jersey, North Carolina, Ohio, South Carolina, Texas, Vermont, Washington, Wyoming
State does not assess school readiness	6	Delaware, Hawaii, Kansas, Oklahoma, Nebraska, Virginia

Vermont has included an assessment of schools' readiness to receive children as part of its school readiness assessment system.

How Do States Use the Data Obtained on School Readiness?

Twelve states reported that they use data collected on children prior to kindergarten for instructional purposes. These data are given to kindergarten teachers to inform them about their incoming class and help them develop individual education plans for children needing them. Seven states use data for school improvement purposes. The data help them to identify high-need schools and improve outcome and services for children in families in need. Six states reported that the data they collect are used for screening purposes, to identify children with special needs, developmental delays, and health

problems (vision and hearing). Finally, four states reported that districts decide how data should be used (see [Table 4](#)).

Table 4
How States Use Data Obtained on School Readiness

Purpose of Data (How Are Data Used?)	States
Instructional purposes	Alabama, Arizona, Arkansas, California, Florida, Indiana, Louisiana, Mississippi, Rhode Island, South Carolina, Tennessee, Utah
School improvement and accountability	Alaska, Connecticut, Maryland, Missouri, Ohio, Oregon, Vermont
Screening and/or placement	Louisiana, Minnesota, New Mexico, Oklahoma, West Virginia, Wisconsin
Districts use information differently	Idaho, Kentucky, New Jersey, Pennsylvania

How Do States Deal with Assessing Children with Special Needs?

Since most states do not have statewide readiness assessments in place, the methods for addressing children with special needs also tend to be locally dominated. Those states that commented on this issue indicated a recognition of federal regulations relating to the identification and placement of children with special needs but provided only very general indications of how this requirement was carried out at the local level. Of the 13 states with some state-level effort to conduct a screening or assessment when children enter kindergarten, 7 indicated that specific adaptations in the procedures or instruments were provided, 3 indicated that some or all children with identified special needs were exempted from the assessments, and 6 indicated that a separate system for assessing these children was provided. A number of state representatives pointed out that readiness assessments were, in general, not suitable for making placement decisions and were not used.

Is There a Systematic Method in Place to Pull These Data Together at the State Level?

At least 8 states collect data on children's readiness at the state level (see [Table 5](#)). The remaining states either do not have a system in place to collect any data or have a system in place to collect data but do not collect data on readiness. Four states did not indicate whether they had a statewide system for collecting readiness data (see [Table 5](#)).

Table 5

States' Data Collection Procedures

Are Data Collected at the State Level?	States
Yes	Alabama, Alaska, Florida, Georgia, Louisiana, Minnesota, Ohio, Vermont
No or Not Applicable	Arizona, Arkansas, California, Connecticut, Delaware, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, Mississippi, Nebraska, New Hampshire, New Mexico, New Jersey, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming
Not Determined	Colorado, Idaho, New York, North Carolina

A complete summary of readiness policies in each state related to the five survey questions is given in Table 6. This table can be downloaded as a [Word 97 file](#) or viewed in its [searchable database format](#). The database can be searched by state and by any of the five survey questions.

Conclusions and Implications

School readiness continues to be a "hot topic" among early educators and policy makers across the country. Historically, the early childhood community has been reluctant to define school readiness and pursue assessment of young children on a wide-scale basis. There are good reasons for this position. Assessing young children is theoretically, psychometrically, and logistically difficult. The potential for long-lasting impacts of misuse of the data is high. From another perspective, however, it seems hard to believe that we cannot indicate in some way how well prepared children are as they come to school. Data on the condition of children as they arrive at school are important in interpreting later accountability measures. Such data are also helpful in understanding how well early childhood services perform in raising the developmental level of young children prior to entry into school. Finally, it seems logical that schools should be able to use data on the condition of children entering school to help design and implement educational programs for these children.

With the ever-increasing emphasis on improved school performance and program accountability, it is doubtful that the early childhood community can sidestep the issue of readiness assessment. The sheer number of states working on policy initiatives in this area is an indication that readiness assessments are going to be a common experience for children in many states. The question is not *if* but *how* children will be assessed and how these data will be used (Kagan, 1999).

Results from this survey indicate some changes in assessment policies and practices over time. In the 1980s, Gnezda and Bolig (1988) found evidence of fairly widespread use of standardized assessments with kindergarten children, and many states reported that these assessments were used to make placement decisions for individual children. In the mid-1990s, Shepard, Taylor, and Kagan (1996) reported that most states had made efforts to inform policy makers and educators of appropriate uses of assessment in kindergarten. Fewer states reported using standardized assessments of children and assessment data to make placement decisions for children. Data from this current survey indicate that perhaps the pendulum of readiness assessment is swinging back toward states implementing readiness assessment systems, but in a new way. Rather than using readiness assessment for placement decisions, many states are developing readiness assessment systems to profile the condition of children as they enter school and to develop classroom curriculum activities to better meet the needs of children.

Data from this survey also indicate that efforts to minimize the misuse of readiness assessment tools may have had some impact at the state level. Respondents seemed to indicate an increased awareness of recommended early childhood assessment practices. For instance, many respondents articulated the difference between "screening" and "readiness assessment." Many indicated that statewide assessments are used not to make decisions about individual children's placement but to guide instruction in the classroom or for accountability purposes.

Although the work that many states have done in the area of school readiness is significant, two fundamental issues have been largely unaddressed: the importance of schools being ready for all children and the role of local districts in readiness assessment. School readiness is a two-sided equation: the child's readiness for school and the school's readiness to receive the child. Although several survey respondents indicated that their state emphasizes the importance of schools being ready for all children, only one state reported efforts to incorporate assessment of schools into its school readiness assessment system. It is clear that the second side of the equation—the readiness of schools—is not being widely assessed. Yet, the readiness of schools can play a critical role in explaining children's performance in later grades. To gain a true assessment of school readiness, data must be collected on both children and schools.

The role of the local district is the second issue that warrants consideration. Many respondents indicated that local districts have a great deal of latitude in how children are assessed when they enter school and how data from these assessments are used. Data on how local districts are assessing children are scarce. These assessment strategies are likely to vary in quality. Some may use standardized assessment strategies, while others may use instruments that are locally developed and have not been tested for validity and reliability. It is impossible to determine local school districts' assessment strategies without further research. The National Association of Early Childhood Specialists in State Departments of Education (NAECS/SIDE, 2000) recently revised its

position statement on assessment of kindergarten children. The document, titled *Still! Unacceptable Trends in Kindergarten Entry and Placement*, indicates continuing concern over the misuse of assessments in kindergarten settings. Respondents to this survey of state-level assessment practices indicated that their states do not use assessment data to determine children's placement in school; however, the policies and practices of local districts need to be examined to ensure that they are doing no harm to children.

Relatively little attention has been given to issues related to children with special needs and readiness assessment. Responsibility for dealing with these issues is almost uniformly left up to the local district or school with little guidance from state agencies. Although a few states address these issues directly, for the most part there seems to be a disconnect between the early childhood and special education communities when it comes to readiness assessment. It is clear that special educators and parents of children with special needs should be partners as states work to develop readiness assessment systems.

Results from this survey indicate a need for education on principles of early childhood assessment and for additional research. Efforts need to be made to inform policy makers and educators of recommended assessment strategies and how the data from the assessments should be used. Research on early childhood assessment must be translated into a format that can be used by policy makers as they design readiness assessment systems. Finally, safeguards such as random sampling must be built into assessment systems to ensure that assessments provide valid information and the information is used in a manner consistent with good early childhood practice.

Additional research is needed to monitor state policies and practices over time. Many states are on the brink of implementing new statewide assessment systems. Future research will be needed to document the implementation of these systems, the effectiveness of these systems, and how data from these assessments are used. Further study is also needed to determine how local districts approach readiness assessment and how they are using the data.

This survey indicates that the vast majority of work in school readiness assessment is taking place at the local district and individual school levels, but that many states are now moving toward more direction at the state level. This situation provides both opportunities and concerns. If such systems are developed with the best knowledge of young children, of appropriate assessment practices for children at this point in their lives, and with the understanding that there are risks of substantial harm if systems are not designed to safeguard individual children and teachers, then the move to increase readiness assessment can have substantial benefits for both children and for schools. To make this vision a reality will require involvement of a broad array of professionals and families in a concerted effort to make schools a better place for young children.

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Notes

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Table 6: Summary of State Definitions and Policies Regarding Children's' Readiness for Kindergarten

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Alabama	<p>There is no official definition, though they have developed a publication titled "Alabama's Kindergarten" that outlines the state's philosophy and goals for kindergarten.</p> <p>Attendance in kindergarten is not required but is open to all children who turn 5 by September 1.</p> <p>The state has developed courses of study that describe kindergarten curriculum.</p> <p>In addition, the state has developed the Alabama Early Learning Inventory (pre-reading and numerical concepts). It was piloted last year, and this year is the first year for use in all public schools.</p>	<p>The Alabama Early Learning Inventory, which measures pre-reading and quantitative concepts, is administered to every public school kindergarten student within the first 4 weeks of school.</p> <p>All schools are required to utilize this measure. Districts may supplement with additional measures.</p> <p>Teachers administer this measure.</p> <p>Teachers attend a 3-hour training provided by the local education agency (LEA).</p>	Information is used for instructional purposes to inform teachers and guide instruction. It is also used to inform pre-kindergarten programs.	The Alabama Early Learning Inventory is used for all students. An adaptations manual has been developed to provide instructions to adapt the measure for special needs children.	Data are compiled at the school district level and then at the state level.
Alaska	<p>There is no definition. Children are eligible for kindergarten if they turn 5 by August 15.</p>	<p>The state has developed and mandates the use the Alaska Developmental Profile. The Developmental Profile is designed as a global measure to provide summary information from each school site to the Alaska Department of Education and Early Development. The Profile is not an assessment tool itself, but it provides the framework for the categories of developmental information that are to be assessed at the school level. The Department believes that districts are in the best position to decide how to gather the detailed developmental information about individual children and are expected to choose which methods they wish to use to gather the information. Teachers then summarize the information on the Developmental Profile form and submit it to the Department.</p> <p>Teachers gather information on all entering kindergarten or first-graders who are entering school for the first time. This must be completed by November 1.</p>	This is the first year Alaska is using this Profile. They intend to look at patterns and identify areas with high need. In addition, they hope to create an awareness of the need for holistic assessment of young children.	If a child has an Individual Education Plan (IEP), specified adaptations may be made.	A composite Profile form for each classroom is submitted to the state. Each elementary principal receives the results for his/her site from the state. Additionally, district assessment directors receive the results for their district and for each site. The Profile is not tied to a student-based database.
Arizona	<p>Arizona does not define school readiness.</p>	<p>The focus of academic standards is</p>	Arizona has 20 million dollars	LEAs utilize information to	There is no state

State	How does your state define readiness? or assess children for school readiness. Children are eligible for kindergarten if they turn 5 by September 1. Arizona allows LEAs to extend this date to December 31, if they deem it appropriate. Individual LEAs may have a definition for school readiness used within the district.	How does your state assess readiness for school? Kindergarten and above. Kindergarten readiness is measured by some LEAs. This is a local decision and varies by district. Sometimes kindergarten teachers administer the chosen instrument. Arizona has developed academic standards for children entering first grade. Assessment is made at the end of the kindergarten year.	How are the data used? Designated for at-risk programs. Some of this money is used to assess the readiness of a small group of low socioeconomic status children. However, LEAs may then utilize this information to plan an individual child's education program.	How do you assess children with special needs? plan an individual child's education program.	Are data integrated into a management information system? tracking of results.
Arkansas	Currently there is not a definition of readiness. A child must be 5 on or before September 15 to be eligible for kindergarten. Preschool Curriculum Frameworks and benchmarks have been developed for children 3-5 years of age. The Early Childhood Curriculum Frameworks align with the Curriculum Frameworks for students in grades k-4. Literacy and math checklists/guides have been developed to assist schools.	Each school is required to conduct a well child check as children make the transition into public school kindergarten that is equivalent to ELPSTI inclusive of health and development/mental screening. Most schools conduct kindergarten entry assessments. The selection of the assessments is school choice, and there are a variety of assessments utilized. Many schools have participated in professional development regarding literacy development in young children and utilize the same literacy assessments as students enter kindergarten.	Assessments administered should assist the teacher in curriculum planning and instruction.	There are specific state criteria and guidelines for the identification, services, and transition of children with special needs, birth through 5 years, that adhere to the IDEA regulations. Assessments for children with disabilities are conducted by a multidisciplinary team.	Schools do not currently report information related to school readiness to the state level.
California	A child is ready for school when he or she turns 5 on or before December 2 of the current school year. If the child misses the deadline, the LEA could choose to admit the child after the child turns 5. This is rarely done. California has studied the issue of school readiness for the past 10 years and has published a number of documents about it. The state in the past decade has expressed the policy that schools must be ready for all children.	The state department has no record of who is and who is not assessing readiness. LEAs use whatever instrument they choose. The state has developed standards for k-12 in four subject areas (language arts, mathematics, science, and history/social sciences). Many schools use these standards to guide their assessments. The state is developing standards for preschool and child development programs. While they will be used in state-subsidized programs to assist with quality improvement, other programs may be using them as well.	Results of individual students' readiness assessments could legitimately be used for curriculum planning or for determining that additional assessment is needed for special education purposes. Schools use the data to plan intensive interventions for those children who are not ready or who do not display knowledge or skills required by the standards.	Schools are required to identify special needs children from birth to age 5 and work with them before they start school. Parents can go to their local school and ask for testing. Local Even Start Family Literacy Programs, Head Start agencies, and state-subsidized child development programs identify children with special needs.	No.
Colorado	There is no state definition. Some individual districts measure readiness, using a variety of screening procedures, such as Child Find.			Districts are required to serve 3- and 4-year-olds with special needs. There is also the Colorado Preschool Program, which is state funded with a capped enrollment.	

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Connecticut	<p>All children who turn 5 by January 1 are considered eligible for kindergarten.</p> <p>Connecticut has a school readiness grant program for children, ages 3 and 4, who reside in identified priority and severe need school communities and who meet certain eligibility requirements. This program is defined as a "nonsecular program" that: (1) meets the standards set by the department, and (2) provides a developmentally appropriate learning experience of not less than 450 hours and 180 days for eligible children." Programs are encouraged to combine with child care to provide full-day/full-year programs that meet child and family needs. Currently, 16 Priority School Districts and 25 Severe Need Schools are receiving these funds.</p>	<p>A guide "Preschool Curriculum Frameworks and Benchmarks for Children in Preschool Programs" was developed and is aligned with the state framework for curriculum for k-12. An accompanying child profile is in the process of being pilot tested and will be used by preschool and kindergarten teachers to measure the skill levels of children in relationship to the curriculum goals. The document was developed for use in the school readiness programs but is also available for use by all preschool programs.</p> <p>Some districts choose to test or assess children using locally selected instruments. Tests are not to be used to exclude children from kindergarten or other pre-kindergarten services.</p>	<p>Data are collected regarding the utilization, demographics, funding sources, family income levels, health insurance, and types of slots utilized (full-day/full-year, part-day/part-year, extended day). A longitudinal study with Families and Work Institute of New York will look at child outcomes and program impact in five selected communities.</p> <p>An annual program evaluation system has been developed that will be used by all participating programs starting July 1, 2000.</p>	<p>Children who have been referred are identified through the multidisciplinary assessment process of the PPT. Identified children then receive an IEP.</p> <p>Children with serious emotional problems as defined in IDEA are eligible for special education. Children are eligible for bilingual education when their dominant language is not English and their level of proficiency in English is not sufficient to assure equal educational opportunities in the regular school program.</p>	<p>Currently, no. When the new program evaluation plan is implemented in July 2000, the data obtained will be collected at the state level in August 2001.</p>
Delaware	<p>The state has not defined school readiness yet, but they have begun to study the issue by doing focus groups with kindergarten teachers and early care providers. They have also sent surveys to early care providers.</p>			<p>Each school district identifies children with special needs. Screenings are done to accomplish this task.</p>	
Florida	<p>No, but there has been new legislation passed concerning this issue. With the new legislation, the state is charged to create a standard measurement with which to assess children.</p>	<p>There is a list of 16 indicators currently being used to assess readiness. Districts can use any instruments they choose to assess children, provided they adhere to the 16 indicators. Children are assessed within 3 weeks of entering kindergarten. If the child does not pass a certain item, the classroom teacher can then adjust the curriculum to teach that skill. Florida-certified teachers administer the assessment in the classroom. There is not specific training, but the assessment relies on the educational training of teachers.</p>	<p>Data are used to help classroom teachers adjust the classroom curriculum to meet the needs of the children they serve.</p>	<p>Children with severe disabilities are exempt from the observation assessment, but children who are in a "pull-out" program are still assessed.</p> <p>Limited English proficient children are usually administered the assessment in their native language.</p>	<p>Yes, districts report on their assessment results to the State Department of Education.</p> <p>The results are reported to the legislature to inform them on the progress of Florida's children and how well the state is doing in meeting Goal 1 of the National Goals 2000.</p>
Georgia	<p>Since the establishment of the lottery-funded pre-k program in 1993, the state</p>	<p>There is no statewide system. Some LEAs assess readiness. Most use the G-KAP.</p>	<p>The GKAP-R (Georgia Kindergarten Assessment)</p>	<p>Children with special needs are given the GKAP-R in exactly</p>	<p>Information from the G-KAP is</p>

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
	<p>of Georgia has defined school readiness in two ways: (1) through the implementation of the school readiness goals of the lottery funded pre-k program, which are to provide appropriate preschool experiences emphasizing growth in language and literacy, math concepts, science, arts, physical development, and personal and social competence; and (2) through the support of Goal #1 of the National Education Goals, which states that "all children will enter school ready to learn" and then define school readiness to include family support, health care, and nutrition.</p>	<p>however, there are others that a few districts use.</p>	<p>Program—Revised) is given at the beginning and end of the school year. The beginning data are used as baseline information. Kindergarten teachers use this information as an instructional checklist for each child and provide activities to strengthen any weaknesses diagnosed. The end-of-the-year GKAP-R is used to show the improvement of individual student scores in each of the areas.</p>	<p>the same way as other children. The GKAP-R is set up to blend into the same types of activities normally provided in the classroom. Each of the sections are hands-on, individualized activities that the teacher presents to the child and then records how the child approaches each activity and what results occur. Therefore, special needs children can be presented with materials, and results can be recorded. Waivers for GKAP-R or specific modifications in assessing any particular special needs child would be found in the child's IEP.</p>	<p>compiled and used at the state level.</p>
Hawaii	<p>There is no current definition of school readiness.</p> <p>Efforts to combine state and community to begin the process of studying this issue have begun.</p>			<p>Within the Department of Health, children are screened for special education programs around the age of 3.</p>	No.
Idaho	<p>Idaho does not have a state definition of readiness. Age cutoff is used.</p> <p>Because the law states that they must test all children twice a year, they have begun administering the Idaho Reading Indicator to kindergarten children.</p>	<p>Any measurement of readiness is done at the local level. A kindergarten handbook has been developed at the state level. Although there is no preschool handbook. Further, there are no state-funded preschool programs. Kindergarten, although funded, is not mandated for children (although all districts offer kindergarten). Local districts may give some tests, but who, what, when, and how are all up to the district, as is the application of assessment results.</p> <p>Many districts conduct a screening during kindergarten registration. At least one district uses the Brigance for this purpose. This district uses the results of the assessment to identify children who could benefit from an intervention program prior to kindergarten.</p>	<p>How data are used is decided at the district level.</p>	<p>The Special Education Department gets federal monies.</p>	
Illinois	<p>Illinois does not define school readiness at the state level; each local district is</p>			<p>Each district/cooperative determines how children with</p>	No.

State	How does your state define readiness? responsible for any definition that is used.	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs? special needs are assessed according to federal law.	Are data integrated into a management information system?
Indiana	At the present time, a child in Indiana must be 5 years of age on or before June 1 to enter kindergarten. There is an appeal process for parents wishing early entrance. This process varies among school districts. Legislation has been introduced to change the enrollment date to September 1. The Indiana Department of Education encourages schools to follow the NAEYC position statement—that schools need to be ready for children rather than children needing to be ready for schools.	Indiana does not have a state test and does not recommend tests. Many school districts do have kindergarten "readiness" testing at the beginning of the year. For kindergarten, commonly used tests include the Gesell, DIAL-R, Developing Skills Checklist, Peabody, and the Developmental Tasks for Kindergarten Readiness (DTKR).	Most schools use this information to drive curriculum and instruction. Very few use this information to segregate children based on "readiness" (e.g., putting children in developmental kindergarten), but the state discourages this practice.	Children are identified in First Steps, Even Start, and other preschool programs. Parents whose children are not in preschool may also request an evaluation. The Indiana State Transition Team assists communities in developing, coordinating, and implementing activities to facilitate an effective transition for all children birth to age 8.	No.
Iowa	Iowa has no definition of readiness. Iowa is a local control state with no mandated state curriculum. The Primary Program Growing and Learning in the Heartland is a curriculum framework that addresses five domains of learning. It is a support to local decision making. All children should enter school if they have turned 5 by September 15.	Individual school corporations provide their own measure of readiness. There is not a specific assessment required. Some districts use locally designed measures of readiness; others use an observation assessment method. These are used for assessment and to evaluate child progress and improve instruction—not to determine readiness.		All children are screened in Even Start, Head Start, and state-supported preschools. If necessary, they are referred to special education agencies. Individual parents can also go to the agencies and make a request.	Child progress must be reported to parents and building- or grade-level results to the community. Data are not integrated into a statewide management system on readiness.
Kansas	Kansas is reluctant to define school readiness at this point in time. Currently in the process of creating criteria for school readiness, the state places emphasis on the total condition of readiness and schools being ready for all children.	There is no standard, statewide measure. Developmental assessments are used but do not prevent a child from entering kindergarten.		A developmental screening is available to any child with a suspected special need. Children may be evaluated in the developmental areas with instruments specifically designed to identify areas not developing appropriately. When an IEP or IFSP is developed, it will indicate areas of ongoing intervention and assessment to determine progress in areas of need.	No.
Kentucky	Children must be 5 years of age by October 1 to be eligible for kindergarten. Kentucky is looking at the issue of	Some school districts use checklists, teacher information, portfolios, or a combination of the three.	Each school district may use the incoming information about children as they wish. There is no state use of the data.	Kentucky provides a preschool program for all 3- and 4-year-olds who have been identified with a disability. The program	No.

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
	readiness from a curriculum standpoint. The goal is not to develop a checklist but to look at the continuation of experiences from preschool through the primary program. They want to make sure that preschool teachers and primary level teachers are talking the same language. They also want teachers to know what the curriculum is at each level. There is no definition.			also includes all at-risk 4-year-olds. At risk of educational failure is defined as being eligible for free lunch.	
Louisiana		The state has a program called the Kindergarten Developmental Readiness Screening Program. It is part of the Louisiana Educational Assessment Program legislation. It requires that every kindergarten student be screened within 30 days (before or after) the first day of school. One of four state-approved instruments may be used: Chicago Early Assessment, Miller Assessment for Preschoolers, Developing Skills Checklist, or the DIAL-R. The state does not require or sponsor any training for teachers, who administer the instruments.	A report is compiled and goes to the State Board of Elementary and Secondary Education. Local school districts might use the report to get ideas about what other districts are doing. Individual classroom teachers use the information to plan instruction and to detect any developmental delays or special needs. It is not used to place kids into special classes or programs, however. A low score on the screening would alert the teacher to consider the child, and this might lead to a recommendation for further testing and diagnosis.	If a child has a current multidisciplinary evaluation, then adaptations to the screening instrument must be made to accommodate him or her. For example, in the case of a probable limited English proficient child, the teacher may administer the screening instrument in the child's native language.	Yes, the information is sent to the State Department of Education where it is compiled into a report. That report is usually given to the State Board of Education. They may share this report with the local school districts.
Maine	There is no formal statewide definition.	Local school districts may assess readiness and choose their own instruments.	N/A	Each child is screened as part of a kindergarten process to determine any areas of concern that might necessitate referral for special education services. For children already determined eligible prior to school entry, the transition policy states that a transitional Early Childhood Team (ECT)/Pupil Evaluation Team (PET) assessment will occur prior to school entry to ensure continuation of services.	N/A
Maryland	There is no definition of kindergarten readiness. The end of the kindergarten definition	Maryland public school kindergarten and pre-kindergarten teachers assess school readiness within the context of the Maryland Model for School Readiness, an	The data will be used as the baseline for fall assessment data and as a school improvement device for spring	The LEA sample will represent all children.	Not at this point, but perhaps in the future.

State	How does your state define readiness? states: School readiness is the state of early development that enables an individual child to engage in and benefit from first-grade learning experiences. As a result of family nurturing and interactions with others, a young child in this stage has reached certain levels of physical well-being and motor development, social and emotional development, language development, cognition, and general knowledge. School readiness as a philosophy acknowledges individual approaches toward learning as well as unique experiences and backgrounds of each child.	How does your state assess readiness for school? educational model designed in collaboration with local school systems to enhance school readiness and to implement effective practices in instruction, assessment, communication with families, and program coordination. The prevalent assessment system used is the Work Sampling System (development checklist and portfolio assessment). There is interest by the Maryland legislature in using WSS checklist information (sample) from the 24 local school systems from the fall assessment of the kindergarten year to establish annual baselines in the seven domains of the WSS. Training to competently use the WSS is being conducted over a 2-year period. These baselines are used as the primary quantitative measure of whether children have reached fundamental milestones when they arrive at kindergarten. Lasting benefits in schools are measured by the CTBS/5 in grade 2 and the Maryland School Performance Assessment Program (MSPAP) Grade statewide school performance index. Other indicators (e.g., health) are being considered.	How are the data used? assessment data.	How do you assess children with special needs?	Are data integrated into a management information system?
Massachusetts	Each school district establishes a kindergarten entry date. Most set the date either around September 1 or December 31 of the year, but the dates vary from July 1 to March 1.	Some local districts assess children prior to kindergarten. If so, they choose their own instruments. The state does not support the use of readiness tests.	Some local school districts use the information for placement decisions and information for teachers.	LEAs are responsible for evaluating children with appropriate instruments. Children may be identified or referred by other agencies, parents, or outreach.	No.
Michigan	Children are eligible for kindergarten if they turn 5 years of age on or before December 1. Currently there is a proposal before the Senate to change the entry date to September 1 and then allow assessment for children who turn 5 between September and December to start kindergarten early. The assessment does not keep a child from entering kindergarten, but it may allow a child to	The results are not used to prevent a child from entering kindergarten but rather to determine whether or not a child should be placed in an alternative program.		This is determined through individual evaluations. If a child is determined to have special needs, he or she may be considered eligible for a pre-primary impaired (PPI) program and can stay in the PPI classroom at 5 but not at 6 years of age. Another option is to put the child in an inclusion classroom with the appropriate support and aid.	No, though they have just started to manage information statewide using a MIS.

State	How does your state define readiness? enter earlier. Some districts do assessment testing, to determine if a child should be placed into a program that may better meet his or her needs. Examples include a 2-year kindergarten program or extended-day programs.	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Minnesota	Some districts administer an assessment when a child enters kindergarten. While Minnesota had not legally defined readiness, they do have some requirements for all of the 350 districts in their state. The child must: (1) turn 5 on or before September 1, (2) have current immunizations, and (3) have participated in an early childhood "screening" (a distinction must be made clear that the state requires a screening rather than a readiness assessment). The screening is for health and developmental purposes only, with a goal of connecting children and their families to appropriate services at least one full year prior to school enrollment. Each child is administered the screening about age 3 to 4.	The Work Sampling System of child assessment is strongly encouraged for the school readiness programs (state-funded preschool services) and is being used by some Head Start and child care programs on a limited basis. Minnesota is in the process of implementing the Work Sampling System for Title I assessment. The state does not measure "readiness" but has requirements that must be met (see previous section). The state does provide districts with a list of approved VALID AND RELIABLE developmental and health screening tools from which they can choose. Approved screening instruments include the ESI-R (Early Screening Inventory—Revised), DIAL-3 (new revised DIAL-R), First Steps, and the Minneapolis Preschool Screening Instrument. Training on hearing and vision protocols are provided annually by the Minnesota Department of Health in regional locations. The screening is typically administered by licensed, state-certified early childhood teachers, early childhood/special education teachers, school psychologists, school nurses, or public health nurses. Local districts are responsible for providing training on the developmental tool that is used by the school district. Training videos are available from the company that developed the tool and from the Department of Children, Families, and Learning. The Denver 2 requires a unique training through the Department of Health. The state	The state is currently developing "early childhood indicators of progress," which are developmental measures for 4-year-olds based on the Work Sampling System and others. These indicators provide a framework for school readiness of preschool children to include strategies for what families, communities, program/schools, and policy makers can do to support child development within a specific developmental domain. Information from the screenings is used to connect parents with necessary resources. Local agencies can use the data to analyze health issues, problems with the justice system, but more importantly, to help local schools prepare for the population of children who will be entering their system. In this way, Minnesota places some responsibility on the schools to be ready for the children they will serve. Information can also be used to assist communities in their planning and evaluation, to inform legislators, and to create fact sheets. All of the information is aggregate so that no individual is identified.	There is a statewide system for tracking and follow along for 0- to 3-year-olds who are at risk for developmental delays. There is a program for family support for 0- to 5-year-olds with disabilities. Children who do not qualify for early childhood special education services are given priority for enrollment in state-funded school readiness that provides an array of services based on identified needs. Children who already have an IEP do not have to go through the screening process because they already have been assessed. For limited English proficient children, the state tries to provide interpreters when they can.	All school districts are required to report "district" aggregated results. Early Childhood Screening data will be disaggregated by county, school district, economic development regions, or other custom queries. The state is currently working on a project with the state planning agency whereby 21 indicators will be taken from early childhood screening data to disseminate information to the local levels. Information will also be available to parents, community members, programs, funders, evaluators, and others who are interested in population-based early childhood

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Missouri	Children must be 5 years of age on or before August 1 to enter kindergarten.	Local districts may choose to use a developmental screening instrument such as the KIDS test, DIAL-R, ESI-R, etc. However, according to the state law, a child cannot be denied entry to kindergarten based on these tests. Beginning in the fall of 1998, Missouri began the Missouri School Entry Assessment Project (SEAP). The SEAP is a comprehensive effort to gather information on the school readiness of children as they enter kindergarten in Missouri public schools. The study involved 3,500 kindergarten children from a stratified random sample of Missouri districts and schools.	The results of the SEAP study will be used by policy makers to improve educational, social, and health services to young children and their families.	Students with special needs are assessed through the Missouri School Entry Assessment Project (SEAP).	data. Several other early childhood data collection and data linkage efforts using Web-based technology are under development. Measures of children's health and well-being based on data collected at early childhood screening are included in the Minnesota state goals document "Minnesota Milestones."
Montana	Children must be 5 years of age on or before September 10 of the entry school year. Special permission may be sought by the Board of Trustees for early entry. A statewide, comprehensive assessment system is currently being developed with components to be added over time. One of the areas of concern is evaluation of	Readiness is defined at the local level. It is not uniform across districts. Districts may or may not have a policy to support this. Some districts use the Metropolitan, Dial-R, or observations during spring kindergarten round-ups and rely on teacher assessment through parent interview and child observation.	N/A	Each school implements a Child Find process to identify children with special needs birth through age 21. It is the responsibility of the school to provide services to meet the needs of children identified through Child Find ages 3-18	No.

State	How does your state define readiness? early childhood readiness. The assessment task force will consider the role of assessment of early childhood learning in upcoming meetings.	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Mississippi	Mississippi has developed benchmarks, assessments, and instructional prevention/intervention strategies that are designed to ensure that children enter kindergarten with the conceptual understandings necessary to be successful learners. They are provided to every preschool program, Head Start program, day care, and parents. Right now, Mississippi is getting ready to put out an RFP asking for agencies/organizations/companies to submit a list of instruments that can be recommended to k-2. Mississippi does not want to look like they are endorsing a single instrument. From this list, the state would like to put out an approved list of assessments that districts can use.	The Marie Clay observation survey, which is used primarily by kindergarten programs and focuses on reading readiness, phonemic awareness, and concept of print, is not mandated, but it is what some districts use. Districts are able to choose what they want to use. For grades 1-2, most districts are using an analytical reading inventory such as the Woods and Moe.	Peer coaching study teams utilize data for classroom decision making.	years. The Division of Child and Family Services in the State Department of Health and Human Service provides services to children identified with special needs birth through age 2. Currently the state is writing an intervention supplement for ESL, incorporating informal and observational assessment for early intervention. It is for descriptive purposes, not special education.	No.
Nebraska	Children must be 5 by October 15 to enter kindergarten; there is limited testing for early entrance at district option for children with birth dates between October 15 and February 1.	The state has no standard measure other than the age requirement. Districts are expressly prohibited from measuring readiness by school accreditation regulations Children cannot be prohibited from entering kindergarten; there is no gatekeeping function.	N/A	Children with special needs are identified beginning at birth to receive services/assistance. However, this is not a readiness definition.	No.
Nevada	The state has no definition of readiness. Age is the only readiness criterion for kindergarten (5 years old on or before September 30).	There is no state measure. There is a list of preschool assessments available for school districts that want to assess children before entering kindergarten. They are not approved by the state for such use and are not required. The list was acquired from Arizona. Some individual districts administer assessments at the beginning of kindergarten. Children are assessed individually. These are not considered	N/A	Children with special needs are referred for a full assessment for possible special education assistance. This is part of the Child Find effort.	No.

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
New Hampshire	The child's birth date meets the district cutoff date for entry to kindergarten or first grade, whichever is applicable.	"readiness for school" measurements but help in planning curriculum. There is no state measurement. Local districts may use different instruments, but the state does not collect data on which ones or the results.	N/A		No.
New Mexico	New Mexico does not have a state definition.	School districts decide what is appropriate for their community. There is a state requirement for general screening. Any new child coming into school starting in kindergarten has to go through general screening. Each school district has to have a process in place. Any child who has transferred from another state or district must be screened initially. Nurses, teachers, principals, and counselors are trained to conduct the screening.	Data are used at the local level for placement and for further testing.		No.
New Jersey	New Jersey does not have a state definition. All program decisions are made locally, even the age at which a child is eligible to start school. The state is working with a task force and developing a preschool expectations document that will contain guidelines that will encompass all developmental domains. The goal is to allow children to have appropriate developmental experiences. The document is in the developmental phase. This document is being developed in the context of the early childhood program and is focused particularly on areas of high need.	Any measures of school readiness are determined by the individual district.	How the data are used is determined by the district.	Early intervention programs assess the children through local child study teams. Children are typically identified at the preschool level by their preschool provider, pediatrician, and early intervention programs through the health department. Child Find activities, or a variety of other means. When a child turns 3, responsibility for children with special needs is transferred from the early intervention program to the local school districts. Local districts address their individual needs for serving children for whom English is not the primary language.	No.
New York	Children who reach the age of 5 by December 1 are considered eligible for entrance into kindergarten. A local school district may resolve to extend the date of entry beyond December 1.	All children entering kindergarten are required to be screened by the local school district. The purpose of the screening is to identify children who may possibly: (1) have a handicapping condition, (2) be gifted, and/or (3) have limited proficiency in English. The screening procedure must include a health examination or a certification that such an examination has			

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
North Carolina	A child is ready for school if she or he is 5 on or before October 16 or if the child is 4 on or before April 16 and can demonstrate that she or he has an IQ in the top 2% (in the nation). If a child has a disability and is between the ages of 3 and 5, she or he is entitled to public funds for readiness preparation.	taken place; a determination as to whether the child is of foreign birth or ancestry and comes from a home where a language other than English is spoken, as indicated by the results of a home language questionnaire and an informal interview in English; and an age-appropriate individually administered screening of receptive and expressive language development, motor development, articulation skills, and cognitive development. Locally, assessments are done by teachers. They are trained by the LEAs. All children are assessed in the spring prior to entry to kindergarten. There is usually a physical exam and some sort of written measurement.		A child who has a disability at age 3 is placed accordingly. Children go through a process that is developed between the school and the community. Each LEA had a different way of designing that process. There are requirements for what areas must be assessed, but how the assessment occurs varies. The areas that are assessed are the following: cognitive, physical, motor, health, speech and language, vision and hearing, and adaptive behaviors.	
North Dakota	There is no definition.	Each school district decides on school readiness using a range of standardized and locally developed tools. School readiness is not measured, per se. Rather, the collective performance of children in preschool programs is measured as they are prepared for kindergarten. The developmental and (when appropriate) curriculum-based assessment is based on teachers' naturalistic observations and is ongoing. Teachers input the information into a computer that the state provides. This information would include their anecdotal notes and anything else about the student (such as a portfolio, parent observations, etc.). Teachers are also asked to respond to specific questions.	N/A	Screening occurs through other state agencies.	No.
Ohio	Children must be 5 years of age by September 30 for kindergarten entry. All children are ready. Ohio looks at whether the schools are ready for the children. There are rules that schools cannot use "readiness" as a mechanism for keeping age-eligible children out. Because kindergartens are expected to meet the children where they are, there is no statewide definition of readiness.	Rather, the collective performance of children in preschool programs is measured as they are prepared for kindergarten. The developmental and (when appropriate) curriculum-based assessment is based on teachers' naturalistic observations and is ongoing. Teachers input the information into a computer that the state provides. This information would include their anecdotal notes and anything else about the student (such as a portfolio, parent observations, etc.). Teachers are also asked to respond to specific questions.	Information is gathered as a means of accountability for preschool programs. Program information is aggregated at the state level so the state can determine average scores on specific criteria. The state can see the percentage of children who can do specific tasks and can perform multiple sorts by demographic categories. Ohio law requires that the state conduct program audits if preschool programs are not getting children where they need to be. Programs that fail	The Galileo system accommodates multiple developmental levels. Data-gathering procedures allow for accommodation of individuals with disabilities. The state is currently refining the system to accommodate complex disabilities.	The MAPS module of the Galileo software package, which was developed for Ohio schools, is used. All funded preschool programs provide data that are aggregated by the computer. The Galileo program aggregates the data

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Oklahoma	There is no state definition; readiness is locally defined.	<p>The assessment system is ecological in that multiple data sources are used to record performance.</p> <p>In addition to gathering data on children, programs gather data on critical program indicators. This year programs will report child and teacher attendance, child and teacher turnover, and teacher qualifications. Next year, data will be collected in the areas of health, social services, and parent involvement.</p> <p>Local schools are required to conduct readiness screening during the kindergarten year to determine readiness for first grade.</p> <p>The Reading Sufficiency Act exists to make sure kindergarten, first-, second-, and third-grade children are assessed with regard to reading level.</p> <p>Decisions about instrument administration, etc., are determined at the local level.</p>	<p>Data are not used at the state level. The tests administered during the kindergarten year are used by the school to help determine the most appropriate educational placement, whether that would be re-placement into a kindergarten classroom, placement into a transitional classroom, or graduation to a first-grade classroom.</p>	<p>Each individual school district identifies and determines how to address such children. In some instances, children with disabilities would possibly be on an IEP, and their assessments would be identified in that particular plan. Districts might address limited English proficiency differently based on their local needs.</p>	<p>and provides means for multiple sorts.</p>
Oregon	There is no written official definition for readiness for kindergarten, but the state looks at readiness in terms of the whole child. A child's readiness is looked at in terms of six developmental dimensions and how all these pieces come together and interact.	<p>The state does not have a standard measure of readiness. District tools are utilized to do screening and to inform perceptions about individual children. Information is used to plan for children. The state does not promote use of assessment instruments at the state level. Some districts do measure readiness.</p>	<p>Data are used to measure progress toward Oregon's readiness benchmarks, to inform counties' and districts' perception of their communities and local school districts so that they may compare information across the state, to inform decisions concerning teacher preparation programs in early childhood programs, to look at health issues in the state related to the Oregon Benchmarks Progress Board, and to discern from the data whether Head Start attendance has impacted readiness. Going forward, this last piece will include other early childhood program attendance besides Head Start.</p>	<p>Assessing children with special needs is handled at the local level.</p>	No.
Pennsylvania	Pennsylvania has no definition of school	There is no state measure. Any measuring is	Use of the information is up to	All children with special needs	No.

State	How does your state define readiness? readiness—it is a local control state, so no state-level position exists. Individual schools may define readiness, but they do not collect information. The state provides technical assistance—helping them in issues related to preschool and school readiness (e.g., if they are looking at particular instruments). Pennsylvania is working to strengthen the partnership between schools, preschools, and Head Start. The only thing that applies in this area might be the Governor's new initiative, Read to Succeed, which is awarded through a competitive grant process. There are 709 schools involved in the program, which requires partnering with preschools.	How does your state assess readiness for school? up to the discretion of the individual school district.	How are the data used? the district. There is no statewide approach regarding whether the school should be ready for the child or whether the child should be ready for the school. However, a few years ago, the state issued a mandate that the information gathered was to be used for making program decisions but NOT for screening purposes.	How do you assess children with special needs? receive an annual evaluation from a multidisciplinary team. The person conducting the evaluation might be the preschool teacher, a psychologist, a speech or occupational therapist, or other appropriate person. When working with children with limited English proficiency, an interpreter who speaks the child's native language is provided. The interpreter provides written results of the assessment to the parents. Economic resources are not a consideration. All preschool children receive services regardless of economic status. There is a lot of emphasis on play-based assessment and on assessing children in natural environments.	Are data integrated into a management information system? No.
Rhode Island	At present, readiness is not defined other than to acknowledge that readiness is a complex constellation of factors and that there is a normal variance among young children's skills and abilities that depend on experience, family, language, and culture, as well as the child's unique developmental pattern. Therefore, in Rhode Island, the sole criterion for children's entrance into kindergarten is that the child will achieve the fifth birthday by December 31 after his or her September entry into kindergarten.	Teachers are "encouraged" to use observations, checklists, and some performance tasks to assess children's skills during the first month of school and to continue to monitor progress. The 1987 Literacy Law did require, and provided resources for, kindergarten screening; however, the issue was not simply that parents were sometimes encouraged to keep their children home for another year but also that the screens focused on "weakness" and kindergarten programs (which are only 2.5 hours per day) were often designed from a deficit model. Since that time, the state has worked with individual districts to develop their own observational assessments, checklists, and portfolios. Use of the Work Sampling System is encouraged.	The data are used for instructional planning to meet individual needs.	Yes, there is a requirement that all children that have come through child outreach be screened for special education before or upon entry to kindergarten. There are a variety of assessment instruments.	No.

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
South Carolina	There is no official definition of school readiness for the state. Department of Education early childhood staff have been designated with the task of developing a definition. They are currently gathering information and interviewing persons. The information will be compiled and used to develop a definition.	Some local districts are using the Dial-3 for pre-kindergarten programs. Some are using an observational survey through the Reading Recovery program, and some have developed their own instruments that supplement the standardized measure with additional data.	Teachers use the assessment information to plan curriculum.	The Dial-3 is used in pre-k.	Not for pre-k, but for first-grade readiness.
South Dakota	There is no state definition; it is controlled at the local level.	Some local districts assess readiness, using various screening instruments.		There is ongoing assessment; children are served starting at birth, but it is not a readiness definition.	No.
Tennessee	There is no written definition of what constitutes readiness in Tennessee, though children must be 5 by September 30 to enter kindergarten. The State Board of Education's Minimum Rules and Regulations state that "Each local school system shall adopt and implement a comprehensive developmental assessment program for kindergarten children to be used in developing instructional programs for kindergarten children." They call this prefirst screening.	Local educational agencies are required to conduct screening of all kindergarten children. Results of that screening are placed in that student's record, but they are not monitored until first grade (that is why they call it prefirst screening). The vast majority of schools and school systems in Tennessee use Brigance as a screening inventory. Most programs do the screening the first 10 days of the school year. Some do it in the summer prior to the school year. Some instruments require special training, but the state does not require any special training.	Data are used in developing instructional programs for kindergarten children.	Assessing children with special needs is done by individual instruments. In the Minimum Rules and Regulations, there is one statement that says "standardized or formalized testing may be administered to pre-k and kindergarten children only for the purpose of diagnosing special educational needs, developing services to support mainstreaming of children with disabilities and for meeting any required federal program eligibility standards."	No.
Texas	There is no definition, though Texas has been studying the issue. They do not have anything official to report, yet.	School districts at the local level are assessing readiness when their kindergarten children come to school and in some cases even pre-k. They choose their own instruments and their own procedures for assessment.	N/A	The language proficiency testing for entry and placement in bilingual ESL is done as early as pre-k. The Texas Primary Reading Inventory in Spanish, called Tejas LEE, is given to students in k-2 to diagnose potential reading difficulties.	There is a system for managing data (PIEMS), but pre-k assessments are not entered into this system.
Utah	Children are ready for kindergarten if they turn 5 years old by September 1.	School readiness is not measured; however, Utah has developed an assessment tool for kindergarten children. There is a mandate that all kindergarten children be assessed during the first 2 weeks of school to gather data about the needs of children.	The information is used to help teachers better meet the needs of the children in their classrooms; to find out in what areas teachers need help; and to gather information on what is	Utah conducts early intervention screenings by preschool special education and the health department. An IEP team helps set goals for the children who are placed in	No.

State	How does your state define readiness?	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Vermont	<p>There is no definition.</p> <p>Vermont is currently developing a three- to four-part measure of school readiness to replace a one-part measure that was based on the Carnegie Corporation Kindergarten Teacher Survey (1991). Part I involves a Kindergarten Teacher Survey seeking data on individual children (nonidentifiable) concerning their status on five developmental dimensions based on the recommendations of the National Education Goals Panel (Physical Development and Well-Being, Social and Emotional Development, Approaches to Learning, Language and Literacy, and General Knowledge). Teachers will complete forms for every child during October. This instrument is currently being reviewed and piloted in several communities. Part II is a "Ready Schools" survey to be administered to school principals regarding policies, practices, and school climate. Part III, currently under development, is an in-depth health assessment to be completed by a health professional (pediatrician, school nurse, public health nurse). Part</p>	<p>School readiness has been previously measured by examining kindergarten teacher perceptions through a survey, children's health (immunization rates), abuse and neglect rates, and grade 2 reading assessment using the Vermont Developmental Reading Assessment. On the VT-DKA is standardized.</p> <p>All children are invited to participate in developmental screening but are not required to do so.</p> <p>Training of those who administer the assessments varies. Often there is little or no training.</p> <p>The new four-part developmental screening will be used with all children. This will be an observational "assessment" that is "administered" by all kindergarten teachers in late October and early November.</p>	<p>Data will not be used for screening purposes or to make decisions concerning children's placement. Results will inform the state about the capacity and effectiveness of community systems to address children's developmental and learning needs before kindergarten.</p>	<p>Vermont is a "full inclusion state" as mandated by the Vermont legislature. Following a screening, children may receive a diagnostic evaluation based on screening concerns. Many school districts use the Battelle.</p>	<p>The previous survey did have a system for pulling the data together at the state level, and the new survey will as well. These data will not be integrated into a MIS until results are validated.</p>

State	How does your state define readiness? IV will be a parent survey to be completed by parents whose children are entering kindergarten. Timeline: Parts I-III, Part IV, Fall 2001.	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
Virginia	Virginia does not define readiness; however, children are eligible to attend public kindergarten if they reach the age of 5 years before September 30 of the year they wish to enter school.	The state does not measure readiness.	N/A	There is a preschool program (special education) for children with disabilities.	N/A
Washington	The child will turn the age of 5 years by August 31 of the school year intended to start.	Local school districts may measure readiness. Some districts do use screening tools, and they use a variety of measures across the state. There are many efforts for first-grade readiness.	N/A	Special Education mandates a Child Find screening for children birth through age 21. The school is responsible for providing services to children ages 3 to 5.	No.
West Virginia	There is no official definition of readiness in West Virginia. The only criterion is age. Some local school systems may have adopted a definition. The West Virginia Governor's Cabinet on Children and Families has adopted six outcomes. Number 2 is "Children will be ready for school." The indicators in the current framework are "lagging" indicators collected after enrollment in school. In the context of the indicators project, a number of other indicators for school readiness were identified (for example, attendance at preschool programs, frequency of parents reading to young children, quality of early childhood experiences, etc.). These were not included in the current framework because no data are currently available on a statewide and county basis.	This is a local decision in West Virginia. Most school systems have a sign-up day, and the children are screened for hearing and vision problems.	Where problems of any nature are identified, appropriate referrals are made.	A preschool program for children with disabilities is in place. All federal and state guidelines are followed as the children move into the kindergarten program.	No.
Wisconsin	Attendance in kindergarten is not required but is open to all children who turn 5 on or before September 1. The state has intentionally not developed a definition. The philosophy is that schools should be ready to receive children at the child's developmental level.	Local districts with Chapter 1 programs use measures consistent with the federal requirements. The state-funded pre-kindergarten programs are not compensatory in nature (are open to at-risk children as well as children who are not at risk) and do not measure readiness as part of their program.	The data are used in a manner consistent with federal Chapter 1 requirements.	Screenings are used when applicable to determine a child's need for further assessment (consistent with IDEA and federal guidelines).	N/A
Wyoming	Wyoming is in the early phases of	Screening is at the discretion of individual	N/A	Through testing, children in	No.

State	How does your state define readiness? discussion towards defining this issue.	How does your state assess readiness for school?	How are the data used?	How do you assess children with special needs?	Are data integrated into a management information system?
		districts.		special education programs are identified by age 3; the screening is used only to help the transition process to kindergarten.	

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Conceptualizing the Professional Role in Early Childhood Centers: Emerging Profiles in Four European Countries

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Abstract

Drawing on data from a recent cross-national study, this paper looks first at how European Union countries—through the framing mechanisms of training and provision—conceptualize the role of early childhood professionals. Four broad categories are delineated. These different role typologies raise questions related to the concept of professionalism. Professional knowledge and representations of early childhood professionals appear to be linked to the particular sociocultural discourse used to define and evaluate these concepts. Some recent contextual changes in four countries—Germany, Denmark, Sweden, and England/United Kingdom—are outlined that are considered potentially to be changing the structure and content of professional activities. Finally, key dimensions of an emergent role profile are described along with some challenges and opportunities that this profile may bring, both for the profession and for public perceptions of early years education and care.

Professional Role Typologies in Selected European Union Countries

Who counts as an early childhood professional? Based on data from a recent cross-national study in the 15 European Union countries (Oberhuemer & Ulich, 1997), a categorization system has been developed to describe the

overall role profiles of the practitioners with group responsibility in the main form of publicly funded early childhood provision in each country. Four broad categories emerge (Table 1).

Table 1
Professional Role Typologies—European Union Countries

Role Typology	Focus of Training	Selected Countries
Early childhood pedagogue	Children from birth to compulsory school age	Finland (<i>lastentarhanopettaja</i>) Sweden (<i>förskollärare</i>) Spain (<i>maestro de EGB especialista en educación infantil</i>)
Preschool specialist	The two or three years preceding school entry	Belgium (<i>institutrice/instituteur de maternelle/kleuterleid(st)ter</i>) Greece (<i>nipiagogos</i>) Luxembourg (<i>instituteur/Instituteurice de l'éducation préscolaire</i>)
Teacher	Nursery and primary education (age range 3 – 1 1/2)	France (<i>professeur des écoles</i>) Ireland (national teacher) Netherlands (<i>leraar basisonderwijs</i>)
Social pedagogue	Various work fields including early childhood education	Denmark (<i>paedagog</i>) (age range 0-99) Germany (<i>Erzieherin/Erzieher</i>) (age range 0-14-27) Luxembourg (<i>éducateur/éducatrice</i>) (for work with all ages outside the education system)

As we can see from Table 1, training is conceptualized for different categories of professional:

- In Finland, Sweden, and Spain, training focuses on work with children from birth up to compulsory schooling at the age of 6 or 7 years. These professionals can be described as **early childhood pedagogues**—a role conceptualization based on a coherent view of provision for young children prior to compulsory schooling, a view combining elements of education and care. It gives the early childhood field a status of its own, separate from that of compulsory schooling.
- In Belgium, Greece, and Luxembourg, the age focus of initial training is

narrower. It concentrates on the two or three years preceding compulsory schooling. These are professionals who could be called **preschool specialists**. Their role is predominantly educational, and the institutions they work in come under the responsibility of the national education authorities. In Belgium and Greece, training is separate from that of teaching staff in primary schools; in Luxembourg, there is some overlap.

- Professionals in the *écoles maternelles* in France, in the school-based, noncompulsory pre-primary classes in Ireland, or in the noncompulsory section of the *Basisschool* in the Netherlands are all trained to be **teachers** for both the nursery and the primary sector. Clearly located within the public education system, they are trained for a much broader age range than the preschool specialists. Although they may have had a specific focus on the early years during some period of their training, time allocation always has to compete with that for the more dominant compulsory school sector.
- The term **social pedagogue** is used to describe a broader based role typology to be found in Denmark, Germany, and Luxembourg. In Germany, the main professional group (*Erzieherinnen* (f), *Erzieher* (m)) is trained for work in various settings outside compulsory schooling, as are the *éducateurs* (m) and *éducatrices* (f) in Luxembourg. In Germany, the early childhood sector is the predominant occupational field. In Denmark, there is no specific age group focus on children. *Paedagoger* are prepared for work with both children and adults in a variety of settings outside the compulsory school system.

Issues of Professionalism

These different role typologies reflect different cultural notions of what it means to be an early childhood professional. Behind these various profiles are varied histories and varying ideas about how societies view the role of early childhood institutions and the people who work in them. These views in turn shape the images that early childhood professionals have of themselves. Teachers or preschool specialists rooted in public education systems with a prescribed framework of accountability are more likely to perceive their work as predominantly child oriented and educational, whereas the early childhood pedagogues and the workers with a broader based, sociopedagogical training are more likely to view their profession in a wider context—child oriented, but also family and community oriented. These are issues around the concept of professionalism. The different role typologies would seem to suggest that what counts as professional knowledge or as professional action is a matter of interpretation, depending on the particular cultural discourse used to define and evaluate these concepts.

In the field of mainstream schooling, teacher professionalism is currently a much-discussed issue. In a wide-ranging analysis of studies in various national contexts, Hargreaves and Goodson (1996) come to the following

conclusion: "What it means to be professional, to show professionalism or to pursue professionalisation is not universally agreed or understood" (p. 4). This is certainly the case in the traditionally female-dominated occupational field of noncompulsory early childhood education and care (see, for example, Finkelstein, 1988; Ebert, 1996; Tallberg Broman, 1997; Penn & McQuail, 1997; Colberg-Schrader & Krug, 1999; Owen, Cameron, & Moss, 1999).

A further complication lies in the fact that the main knowledge base that has long informed professional action in early childhood institutions—developmental psychology—has been challenged in recent years as the dominant discourse in the field (Dahlberg, Moss, & Pence, 1999). It has been argued that the content of most training courses concerning the parameters of socialization, growth, learning, and teaching is based on predominantly Western scientific and pedagogical traditions. Cultural diversity and cultural politics even today remain under-addressed issues—not only in training, but also in policy and research.

While professionalism is an unclear and a contested concept, it is nevertheless generally agreed that it is linked to "quality of action" within a specific occupational field. It would therefore seem useful to examine some of the present challenges for early childhood professionals that are transforming the structure and content of professional activities.

Change Mechanisms Affecting the Practitioner Role

In a subsequent study, I have started looking more closely at the practitioner role in four countries: Germany, Denmark, Sweden, and England. During the preliminary phase of the project, besides interviewing researchers, administrators, and practitioners in these countries, I have been reviewing data on recent changes in legislation, policy, and steering systems. In most cases, decentralization and local government reform have been taking place in the context of restrained public spending and a climate of raised expectations concerning accountability for outcomes.

Germany

In Germany, 1990—the year of unification—marked the merging of a socialist state system of extensive child care into a more market-oriented and less-subsidized western German approach towards publicly funded services. In the same year, a new Child and Youth Services Act came into force, and despite the common task of adaptation to this new legislation, the divergent starting points in the eastern and western parts of the country have precipitated two distinctly different lines of development.

In the western part of Germany, the focus has been on the *expansion* of provision in order to meet a pledge in the Child and Youth Services Act to introduce legal entitlement to a kindergarten place for every child from the age of 3 years. This goal has been more or less reached in quantitative terms.

However, the quality of the places offered is still a matter for debate. Both dimensions have been affecting the work of practitioners in kindergartens. On the one hand, the expansion drive—in a climate of economic constraint—has left center staff in many regions facing cuts in the standards of their working conditions. On the other hand, expectations are growing concerning the pivotal role of practitioners in the development of high-quality services (Oberhuemer & Colberg-Schrader, 1999).

The picture in the eastern *Länder* looks quite different. Here the major issue over the past decade has been one of *reducing* services within a context of a sharp fall in the birthrate, a high rise in unemployment, particularly among women, and a different overall policy of child care. This changed policy framework in 1990 included the move from a centralized to a decentralized (federal) system, from services provided free of charge to fee-paying services, from administrative responsibility under Education (and high public esteem for kindergartens) to administration under the auspices of Social Affairs ministries, from a centrally regulated curriculum to a system of provider autonomy in curriculum matters, and so on. Cutbacks in services and the above-mentioned demographic changes have had predominantly negative effects on job availability, on staff employment chances and patterns, and on professional self-esteem. Also, it was the younger practitioners who were the first to lose their jobs. In the west, 23% of the staff in early childhood institutions are under 25, whereas in the east, this figure is only 4%. Conversely, only 15% are older than 45 in the west, whereas this age bracket accounts for 33% of the total staff employed in the east. This picture reflects the contrasting historical and political contexts of the profession before 1990 (Oberhuemer & Colberg-Schrader, 1999).

At the same time, the Child and Youth Services Act places the professional activities of educators in both the eastern and western *Länder* in broader parameters than before. Besides providing both education and care (*Betreuung, Bildung, und Erziehung*) and helping to "advance the development of the child into a responsible member of society," kindergartens and other day care facilities are required to educationally and organizationally adapt to the needs of the children's families; they are expected to include parents more in decision-making processes, to collaborate with other local agencies concerned with children and families, and to be involved in local planning policies.

These expectations come at a time of local government reforms aimed at streamlining administrative practices, of increasing marketization of services, and of accompanying moves towards deregulation. The providers of early childhood services—municipalities, churches, and other welfare organizations—face the pressure of increasing competition and accountability. Practitioners are clearly key links in the process of repositioning early childhood centers in the context of the current "quality debate."

Denmark

In Denmark, a well-established decentralized system has given individual centers a considerable degree of autonomy. For some years now, parents have been guaranteed by law a central role in consultation and decision-making processes. Together with parents, the center staff draw up a plan of activity for the coming year. For the practitioners, this new collaborative framework entails making taken-for-granted routines explicit, it demands transparency with regard to educational goals and practices, and it involves reflecting on and evaluating the center program through the eyes of committed nonprofessionals. Interesting questions with regard to the system in Denmark are: What effects is this changed framework having on the practitioners' self-image and concept of professionalism? Where do they see the advantages, where the problems of this close collaboration?

In a recent review of changes in early childhood education in Denmark, Broström (1999) suggests that—following the results of an international comparative study on reading standards that showed Denmark to be performing lower than many other countries—signs of a "back to basics" movement are emerging in what has traditionally been a system that highly rated children's independence and self-initiated activities. Could this finding indicate that practitioners are changing their views? Or that they are taking a backseat in a discussion dominated by politicians, parents, and researchers? Questions such as these would appear to need some unraveling.

Sweden

In Sweden, decentralization is a more recent phenomenon. The transition from a centrally regulated to a decentralized and for the first time partly privatized system of early childhood education and care in the 1990s means both more autonomy and more opportunities for individual initiative; it also holds more risks concerning the program that centers choose to follow. How do practitioners react if parents express wishes for a more formalized learning setting than traditional preschool culture in Sweden? How are differences of opinion as to what is "best for the child" negotiated? And how do women practitioners cope with the element of competitiveness that this new positioning in the local community involves? On the one hand, researchers are suggesting that early childhood institutions need to resituate themselves in the community as projects of social, educational, and cultural significance (Dahlberg, Moss, & Pence, 1999). On the other hand, Sweden has a rather weak tradition of parental involvement, and the idea of centers as neighborhood centers is a fairly recent one. At present, a quite different issue is the current focus of professional discussion. For the first time in Sweden, practitioners are required to work within a stated curriculum framework. This requirement is one of the outcomes of the restructuring of early childhood services in 1997, when they were placed for the first time under the responsibility of the Ministry of Education. The guidelines accompanying the curriculum expressly state that the center team is responsible for ensuring that work is directed towards the goals of the curriculum. Practitioners are therefore currently more concerned with strengthening the inner dynamics of

the center's work.

England

Compared with Denmark or Sweden, England is a country that has a diverse and, up to now, fragmented system of early childhood services. Over the past two years or so, the New Labour government has introduced a series of policy initiatives aimed at improving this situation. One of these initiatives is the Early Years Development and Childcare Partnerships scheme, which hopes to produce more effective region-based planning and coordination among the great variety of service providers. How will these partnerships affect the practitioners in the various settings? How actively will they be involved in decision-making processes, and how will this involvement affect the way they see their own practice? Another initiative has been the introduction of so-called Early Excellence Centres. The institutions that have been chosen for this purpose are mostly "one-stop shops," that is, multifunctional centers linking educational provision for children with diverse services for families. A high-profile institution of this kind is the Pen Green Centre for Under 5's and Their Families, which is well known for its innovative forms of parental involvement, in particular father involvement, and for establishing links with all kinds of further and higher education institutions to ensure that the center is also a place for continuing learning, not only for staff, but also for parents (Whalley, 1997). How will these Early Excellence Centres influence role perceptions in other early childhood settings?

Emerging Role Profiles—Challenges and Chances for the Early Childhood Profession

Creating a stimulating learning environment in which all children are encouraged to explore their full potential has long been a stated task of early childhood institutions. However, the developments I have briefly outlined suggest that—at least in the four countries I have chosen for analysis—a conscious step is under way towards extending traditional educational perspectives. Drawing on my knowledge and experience of the situation in Germany (Oberhuemer & Colberg-Schrader, 1999), it would appear that a new profile of professional activities is emerging, one that may also be related to developments in Denmark, Sweden, and Britain. This profile includes the following dimensions:

- Conceptualizing and developing a program—in dialogue with parents, providers, and representatives of the local community—that reflects both the needs of individual children and families and the specific location of the center.
- Presenting and legitimating professional practice in front of a lay audience (e.g., local politicians, interested citizens).
- Implementing cooperative forms of center management, decision-making processes, and administration of resources.

- Developing a wide spectrum of participatory roles for a broad range of parents.
- Developing specific strategies for involving fathers and parents from minority ethnic backgrounds.
- Linking educational activities for children with community network activities for families.
- Supporting parent self-help groups.
- Cooperating with other professional agencies on a regular basis (e.g., educational, medical, therapeutic services).
- Examining and experimenting with different approaches towards quality development and evaluation (self-assessment, peer evaluation, external assessment).

Little is known about practitioners' views on this emerging role transformation, with its new emphasis on negotiating and networking competencies. For example, research in the United States on early childhood educators' belief systems suggests that a majority of practitioners believe that early childhood centers should serve children alone, rather than families (Burton-Maxwell & Gullo, 1995). Here—referring back to the different role typologies—we can conclude that this question will need to be addressed by initial and further training. A number of British universities have taken a welcome step forward by introducing Early Childhood Studies degrees that take a broader view of early childhood services than most teacher training courses (Calder, 1999). In Germany, initial training—even though it is broad based in principle—is certainly in need of reform to meet the requirements of such a role profile (AGJ, 1998). A recently endorsed 16-*Länder* agreement on the initial training of educators has provided the potential framework for developments in this direction.

These emerging shifts in the practitioner's role are taking place in a context and climate of economic rationalism. The accompanying pressure of accountability is likely to produce an ambivalent stance among practitioners. Some may view these developments as a chance to enhance and extend their professionalism. Others—possibly the majority—may perceive them as a threat. This delicate interplay of contradictory forces needs to be recognized and addressed by both research and policy. Given the necessary backing, early childhood practitioners can contribute actively, not only towards reconstructing their own professional role, but also towards raising the visibility and status of early childhood education and care in the public domain.

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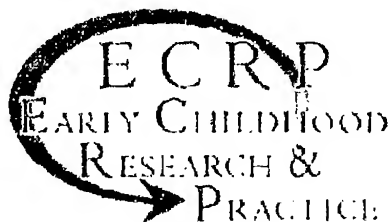
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Language Development and Science Inquiry: The Head Start on Science and Communication Program

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Stefanie Bloom, & Anika Ragins, Temple University**

Abstract

There are ongoing discussions about the best way to teach science to young children during the preschool and early elementary school years. What practice is most likely to contribute to children's development and learning while cultivating exploration, questioning skills, and revision of thinking to accommodate new ideas in science? The Head Start on Science and Communication (HSSC) Program is based on collaborative research from the fields of science education and language development. Program objectives have been aligned with the curriculum and are based on the national science standards for young children. The HSSC Program evolved over four years of research and implementation at schools in Pennsylvania, New Jersey, and Washington, DC. The initial phase of the program included input from parents, teachers, and teaching assistants to help develop lessons and shape the inquiry-based strategies for young children learning about life science, earth science, and physical science. The second phase of the program incorporated curriculum materials and investigative experiments to promote inquiry-based, hands-on science as a vehicle for promoting young children's language development. Children learned to match, discriminate, categorize, sequence, and associate information as they worked with peers to understand science concepts, relate facts, and solve scientific problems. As a result of participating in the HSSC Program, teachers employed collaborative learning strategies, engaging in small-group problem-solving teams with verbal interactions among teachers and students. Outcomes also included positive changes in teachers' questioning strategies. Teachers became proficient in asking more open-ended questions at increasing levels of difficulty instead of basic factual

and yes-no questions. Preliminary data from a study of 85 first-grade students who engaged in a series of 12 science experiments indicated that prior to the program, they answered an average of 58% of the factual-type questions correctly and 15% of the application-type questions correctly. After learning about topics such as earth surfaces, minerals, changing colors, seeds, and plants, these children answered the factual-type questions with 96% accuracy and the application-type questions with 92% accuracy, indicating a significant gain in knowledge beyond the $p < .05$ level for both types of questions. Students improved their knowledge of science concepts along with their ability to answer questions requiring higher-level cognitive skills. Teachers noted students' improved knowledge of science and enhanced language development.

Introduction

There are ongoing discussions about the best way to teach science to young children during the preschool and early elementary school years (Bell & Gilbert, 1996). What practices are most likely to contribute to children's development and learning is the question that parents, teachers, and the research communities want answered. We know that young children's thinking is expanded through their cognitive development as well as their personal experiences. Children must explore, ask questions, and revise their thinking to accommodate new ideas (Mundry & Loucks-Horsley, 1999).

This article discusses a model that fosters science learning through a systematic approach to understanding language at increasingly higher levels of abstraction by using questioning skills to elicit factual and application information. Language skills are supported with hands-on, visually engaging materials for learning about life science, earth science, and physical science during the primary grades. At the Mid-Atlantic Laboratory for Student Success headquartered at Temple University Center for Research in Human Development and Education, science educators and speech-language specialists have developed a science curriculum that promotes the content of and process for learning about science in contexts that young children can experience and understand.

Instructional Methods

Most early childhood programs incorporate both explicit teacher-led activities, in which the students follow the teacher's directives; and exploratory, teacher-facilitated activities, in which students guide instruction based on their interests and curiosity (Fradd & Lee, 1999). These two practices stem from different theories and philosophies of how young children learn and the role adults play in the learning process. Explicit curriculum models for preschool are based upon behavioral learning principles. This theory is linked to learning theories in which cognitive competence is assumed to be transmitted through the process of repetition and reinforcement (Stipeck & Byler, 1997). The explicit models use a highly structured teaching approach for acquiring academic skills. The skills emphasized tend to be those assessed by general intelligence and achievement tests. Teachers may

lead small groups of children in structured question-and-answer lessons and drills. Teachers also spend much time correcting errors to keep children from learning incorrect answers. Workbooks and paper/pencil-oriented activities are generally included in the learning process (Schweinhart & Weikart, 1997).

The other approach incorporates the exploratory model of learning and suggests that children construct their knowledge by confronting and solving problems through direct experience and use of manipulative objects (Stipek & Byler, 1997). The goal of the exploratory teaching model is to create an environment in which children may explore, learn, and develop when involved with naturally interesting materials and events. In such a setting, there are no structured responses. Rather, activities lend themselves to creativity and exploration (Stipek & Byler, 1997). In exploratory models, the teacher's role is to serve as a facilitator for the children by providing them with opportunities to engage in activities and interact with their peers. Teachers who are unfamiliar with the "facilitator role" may be uncomfortable and feel as if they are not teaching according to the curriculum.

Long-term and short-term studies have looked at the different outcomes of these two approaches toward early childhood education and their impact on cognitive and social-emotional development (Becker & Gersten, 1982; DeVries, 1991; Gersten, 1986; Schweinhart, 1997; Schweinhart & Weikart, 1997).

Some researchers believe the explicit-directed type of teaching is management driven. Cuban says, "The basic imperative of elementary schooling is 'to manage large numbers of students who are forced to attend school and absorb certain knowledge in an orderly fashion'" (as cited in Goldstein, 1997, p. 5). Cuban explains that this demand has led to the development of a curriculum approach that is linked directly to the challenge of managing children. Other researchers believe this type of curriculum is superior to exploratory, child-centered models, especially for children of low-income families. Delpit (1995) maintains that the explicit-directed type of curriculum values basic skills over creative thinking and is necessary because of the value society places on highly structured skills-oriented programs. Schweinhart and Weikart (1997) state that explicit, teacher-directed instruction may lead to a temporary improvement in academic performance at the cost of missed opportunities for long-term growth in personal and social behavior. They support the use of an exploratory, child-centered curriculum to further develop social responsibility and enhance interpersonal skills. Additional research reports that children in exploratory, child-centered programs display better language development and verbal skills (Dunn & Kontos, 1997).

Both approaches have value in educating young children. Some of the questions that have been asked include the following: Which is better for the teacher? Which is better for children in developing cognitive competence? and What curriculum models are best for enhancing the social-emotional development of young children? We know that students can benefit from both the explicit and exploratory approaches. "Instead of viewing these approaches as opposing camps, they could be conceptualized as complementary

opportunities for teachers to move between perspectives" (Pradd & Lee, 1999, p. 16).

One of the goals of this paper is to provide an example of an effective program for developing science knowledge and language skills with young children that incorporates both explicit, teacher-directed methods and exploratory, teacher-facilitated methods.

Head Start on Science and Communication (HSSC) is the early science program that has been implemented in classrooms that use the Adaptive Learning Environment Model (ALEM) (Wang, 1992), a cornerstone of the Community for Learning (CFL) comprehensive school reform model. This instructional program provides the infrastructure for blending exploratory and explicit learning to support children's unique abilities and individual differences. The program has been highly influenced by over two decades of research and broad, field-based implementation of innovative school programs (Wang, Haertel, & Walberg, 1995). CFL "draws itself from the field-based implementation of an innovative instructional program that focuses on school organization and instructional delivery in ways that are responsive to the development and learning needs of the individual child, the research base on fostering educational resilience of children and the youth beset by multiple co-occurring risks, and the forging of functional connections among school, family, and community resources in coordinated ways to significantly improve the capacity for the development and education of children and youth" (Wang, 1998, p. 10).

Developmentally Appropriate Practices

In connection with the instructional model, the National Association for the Education of Young Children (NAEYC) recommends that developmentally appropriate practices be adopted. Developmentally appropriate practices (DAP) are not a curriculum; however, they provide standards for identifying high-quality early childhood education programs. DAP emphasizes the treatment of children as individuals with the ability to make choices about their educational experience (Bredekamp & Copple, 1997).

The HSSC Program has implemented NAEYC's suggestions in the classroom to meet children's individual needs. These recommendations include, but are not limited to, (1) ensuring that classrooms function as caring communities so they can help children learn how to establish positive and constructive relationships with adults and other children; (2) providing opportunities for the children to accomplish meaningful tasks and experiences in which they can succeed most of the time; and (3) preparing a learning environment that fosters children's initiative, active exploration of materials, and sustained engagement with other children, adults, and activities. Further recommendations include planning a variety of concrete learning experiences that are relevant to children and providing opportunities for children to plan and make choices about their own activities from a variety of learning centers.

Appropriate opportunities for learning are further supported by providing an environment that cultivates receptive and expressive language and cognitive development. As preschoolers proceed through stages of language development and cognitive growth, they gain skills in acquiring vocabulary, understanding simple stories, following directions of increasing complexity, and learning about causal relations. Their expressive skills expand to use grammatically appropriate sentences, and they learn to exchange ideas in discussion, discuss why something happened, ask questions related to a topic, and retell a simple story by kindergarten age. As young children expand their vocabulary, they begin to differentiate likeness and differences and to match, discriminate, and categorize objects and events through paired comparisons. Such emergent skills are precursors to later reading and writing. As young children gradually refine their visual perception and explore their environment, they learn to sequence events in logical order. They begin to make associations and can compare objects on the basis of different attributes. These abilities lead to higher-level skills of planning, making judgments, and solving problems. Throughout this time, children learn that their communication has an effect on others and on their own ability to get what they want (McLean & McLean, 1999).

Classroom Dynamics

The manner in which the teacher structures learning opportunities and the methods used to foster interaction among students while learning are critical to supporting language and cognitive development. Howes and Phillipsen (1998), in their study on the effects of preschool interaction, found that low levels of child-teacher closeness when a child is 4 years old lead to social withdrawal in second grade and that prosocial ratings in second grade were best predicted by preschool classrooms that were high in children spending time interacting with peers. This finding supports the recommendation of NAEYC that teachers serve as facilitators to children's self-initiated activities. Teachers can not only provide instruction but also provide opportunities for children to explore concrete materials and interact with peers (Bredekamp & Copple, 1997). Teachers can circulate around the room responding to students' requests, giving individual instruction, or offering feedback and reinforcement (Wang, 1992).

Students' internal motivation to succeed is further fostered by a classroom environment that incorporates cooperative learning activities. In such classrooms, students tend to be less focused on how they are doing relative to their peers and are more focused on learning for its own sake. According to Nicholls (1990), students in classrooms with a cooperative learning structure focus more on how to accomplish tasks, and they view making mistakes as part of a process towards learning. "Depending on the type of classroom structure teachers choose, they are communicating a view of success or failure to their students that can have a critical impact on children's beliefs" (Bempechat, 2001, p. 12).

A Best Practice Model

In deciding how to encourage students to explore the nature and meaning of science while developing their comprehension and expression, science educators and language development specialists have developed a curriculum that is both explicit and exploratory in nature, taking the best qualities of each. The curriculum is based on the (1) American Association for the Advancement of Science Project 2061 science benchmarks (AAAS, 1993); (2) developmentally appropriate practices; and (3) language skills for classroom communication (Farber & Klein, 1999).

The developers of the HSSC Program have based their thinking on a few guiding principles. Young children have a natural tendency to explore. Children's daily playtime activities engage them in "science." Science education in school unites cognitive development and children's prior knowledge and experience with intuitive scientific theories to formulate new ideas. As they develop explanations about the world around them, they are learning broad scientific concepts. While they are discovering their world, they are questioning and investigating. Rather than looking at isolated science concepts, science for the early childhood student is an introduction to the "big picture." Newer approaches also emphasize learning that maximizes students' individual competencies. Using an interactive process to enhance students' questioning abilities (Stone, 1994), the HSSC Program encourages social interaction, discourse, and questioning during science lessons. This interactive, analytic approach tends to improve kindergarten children's planning and problem-solving skills. Students are asked to describe and communicate their ideas as they make sense of their own learning, drawing from prior knowledge and asking questions to acquire information. This interactive inquiry-based perspective is supported by the National Science Education Standards (National Academy of Sciences, 1996).

Program Description

The Head Start on Science and Communication (HSSC) Program was initially conceived to unite parents and teachers to promote current and future success in science for children in preschool, kindergarten, and first grade. The HSSC Program emphasizes the development of children's language skills through an explicit, teacher-directed approach and an exploratory, child-centered approach to acquiring science knowledge. The program aims to achieve three very specific goals:

- broadening participants' science knowledge and conceptions around three science domains: life science, earth science, and physical science;
- enhancing age-appropriate abilities through scientific inquiry for observing, hypothesizing, predicting, investigating, interpreting, and drawing conclusions; and
- integrating science with communication to recall, identify change,

generalize, analyze, judge, and solve problems.

The two phases of the HSSC Program are described below. Phase I included outreach and planning with parents and teachers in the community; phase II was an instructional scaling-up attempt to incorporate specific science experiments in classrooms.

Phase I

The participants in phase I of the study represented Head Start programs from 18 schools in Philadelphia and New Jersey. Participants included 18 teachers, 11 classroom assistants, and 10 parents, ranging from 19 to 53 years of age, and included three ethnic groups: African American (68%), Caucasian (29%), and Latino (3%). Eighty-five percent of the Head Start programs represented were based in large urban settings, and 15% were based in suburban or rural settings. Although the educational background of participants varied, none of the participating parents held college degrees.

All participants received interactive inquiry-based training to broaden their general science knowledge about life science, earth science, and physical science, and to create strategies to establish learning environments that encourage an inquiry approach to everyday learning in school and at home. A basic design principle of the HSSC Program is the inclusion of parents in the learning process. This element was critical to the success of the planning phase.

Program Components

Phase I of the HSSC Program included three components: (1) a summer institute that provided intensive, hands-on instruction and learning experiences for participants; (2) ongoing follow-up technical assistance and training support for program implementation; and (3) extended implementation of the HSSC Program with the first cohort of participants in community-based science-rich centers such as area museums, as well as moving into phase II of the program.

The focus of the two-week summer training program was to provide professional development and an opportunity to promote collaboration among teachers and parents for improving problem-solving skills. The primary goal of the summer institute was to create a lifelong interest in science for participants and the children with whom they interact. In keeping with the intent of the National Science Education Standards, the HSSC curriculum materials were developed to assist participants in fostering their own and the children's "natural curiosity" to learn about the world.

The curriculum materials and experiments were designed to promote inquiry-based, hands-on science as a vehicle for language development with young children. Each experiment begins with background information about

the topic under investigation and a teacher demonstration module that provides an opportunity for teachers to engage students with manipulative materials and ask guided questions to gain more information about what students know and what they need to learn. As the project participants implemented these plans that were developed during the summer, the technical support became increasingly site-specific, based on individual classroom needs. For example, one teacher expressed the need to learn about various inferential questioning techniques, while another teacher requested strategies for promoting student collaboration.

Data Collection

Data on program implementation were obtained through surveys, on-site observations, and interviews. Participants (teachers, teaching assistants, and parents) were rated as either "encouraging inquiry," because the participants asked questions that helped students gain needed information to solve problems, or "giving away," because the adult immediately answered questions asked by students. In addition, on-site observations were conducted to determine each classroom's primary mode of interaction. Classrooms were classified as "collaborative" or "competitive." The post-implementation surveys were followed by semi-structured, open-ended interviews to learn more about classroom interaction.

Phase I Findings

Changes in Questioning Strategies

Preliminary findings from the post-implementation surveys indicated that 50% of the teachers relied solely on the use of questioning to encourage students' problem solving, 33% encouraged problem solving as well as giving away the answers, and 17% tended to simply "give away" answers as opposed to using questions to get children to try to solve the problems themselves. The majority of parents (83%) engaged in both questioning to encourage problem solving and giving away answers; 17% engaged in giving away answers only; and "none" engaged in only using questioning to encourage problem solving. Almost half of the classroom assistants reported that they tended to give away answers. In summary, classroom assistants gave away substantially more answers to students when compared with teachers and parents, who encouraged more problem solving through questioning.

Changes in Classroom Interaction

A teacher's philosophy and his or her interaction with students have been found to have a major impact on how students view success and failure. Nicholls (1990) has shown that traditional, competitive classrooms produce children who are overly concerned with how they are doing relative to their peers. This competitive style makes children anxious about mistakes, and students tend to equate their mistakes with failure. This anxiety has been

found to affect children's beliefs about themselves and their abilities. Conversely, cooperative classrooms foster a sense of learning through accepting mistakes as experiences for growth. Nicholls further points out that the challenge for teachers is to help students maintain a healthy balance among accepting mistakes as opportunities to learn, believing they have the ability to learn, and knowing that effort will help them maximize that ability. Prior to training, the 12 observed classrooms lacked collaborative interaction among teachers and students. Following the training (spring 1997), the classrooms were observed to determine if there was a change in their primary mode of interaction. Eight of the 12 classrooms were rated as collaborative, engaging in small-group problem-solving teams with verbal interactions among teachers and students. Teachers not only asked questions of students but also encouraged students to ask questions for clarification, to understand that learning takes time, and to understand that mistakes are accepted when followed up with new information to solve problems. Three classes were found to be both collaborative and competitive, fluctuating in interactions during the course of the day. Only one class remained predominantly competitive in nature. Collaborative interactions included working together on projects, with students assuming varied and complementary roles as they worked on problem-solving activities in science. Characteristics of classroom interactions included listening, waiting, acknowledging comments, inviting questions, accepting others' points of view, and encouraging students to express ideas. Competitive interactions included activities that focused on performance with a form of grading attached.

Changes in Classroom Focus

When interviewed after program implementation, participants indicated that they changed their classroom focus to be primarily inquiry-based (75% of classes). The participants said they used more open-ended questions with their students instead of asking yes-no type questions. They asked "wh"-type questions (i.e., who, what, where, when, why, and how) with much greater frequency (encouraging recall, application, and problem solving). Some teachers set up science centers and other exploratory learning centers within the classroom setting.

Generally, parent involvement reinforced classroom learning. Teachers sent letters to parents, explaining what would be discussed in class and encouraging parents to visit the classroom. Teachers and assistants discovered that the use of language that targeted vocabulary development and questions was integral to enhancing learning and engagement of young children. Teachers reported making a difference in the children's scope of cause-effect knowledge.

At the completion of phase I, participants had many ideas for the future of the HSSC Program. Some teachers planned to engage other faculty members in brainstorming questions that tapped inferential thinking for science experiments. Other teachers looked forward to involving more parents, noting that parental involvement is one key to successful program implementation. Overall, participants anticipated implementing the techniques and using the

ideas they learned. Because of the success of phase I, the program was expanded from preschool children to those in the early elementary years (kindergarten through grade 2). Phase II of the program included further implementation, refinement of program materials, and expansion to kindergarten through grade-2 classrooms.

Phase II

Phase II of the HSSC Program involves the formal development of 30 science experiments and a manual covering three science domains: life science, earth science, and physical science (see the [appendix](#)). The experiments are based on benchmarks written by the [National Science Foundation \(National Academy of Sciences, 1996\)](#). Using specific language concepts and scientific background information, the teacher initially tests students individually using the pre-test to assess the student's knowledge base. Following the pre-test, the teacher introduces each science experiment to a small group of students or to the entire class. Students also have an opportunity to engage in exploration using the manipulatives and directions within science activity kits. After the experiment is completed, the post-test is administered to assess a student's content knowledge gains.

The HSSC Program encourages children's natural inclination to explore by providing an early learning environment that is conducive to science literacy. The HSSC Program incorporates the use of individualized hands-on science learning activity boxes as well as small-group and whole-class instruction. Providing hands-on learning experiences fosters curiosity in young children and engages them in the social and cognitive processes that promote language and communication skills essential to continued academic success. The combination of explicit, teacher-directed methods and exploratory, child-centered methods allows young children to obtain information, explore their surroundings, and develop meaning, thus honing their communication and problem-solving skills.

The explicit role of the teacher is an important component of this early childhood program. As a facilitator, the teacher assists individual students in gaining new scientific knowledge by relating experiences and answering personal questions when appropriate. Initially, teachers facilitate the demonstration lesson that introduces the scientific concepts embedded in the students' individualized activities. The classroom teacher provides background information and supports students as they learn newly introduced science material. Manipulative materials and supplies for the science activities are all included in 150 individually boxed learning activity kits.

After each science demonstration, the teacher asks probing questions to determine students' general concept understanding. Based on the lesson taught during the science demonstration, the students will have the opportunity to use their knowledge to work through a series of science activities that are organized into five levels. The science activities are arranged hierarchically by cognitive level from basic matching tasks to higher-level associations based

on understanding relationships.

The first level in the hierarchical structure of the program is *matching*. While the students work on the first science activity, they are encouraged to identify likeness among objects. This level is followed by level 2, a *discrimination* task. This level focuses on the student's ability to not only identify similarities but to also distinguish differences. These activities help foster the ability to compare and contrast, a basic scientific process (Hammrich, 1998). Level 3 focuses on *categorization*. Children use their ability to discover similarities and organize information into like units. Level 4 requires the ability to order information for *sequencing*. Students arrange various items according to patterns or gradations, noting specific stages and order. The final level, level 5, involves an *association* activity. These activities incorporate previous knowledge levels and challenge students to transfer information, understand relationships, and make new connections.

To demonstrate understanding of scientific concepts, students answer six post-experiment questions that directly relate to the five activity levels. The post-assessment questions are based on a modified taxonomy derived from Bloom (1984). To determine if children have acquired knowledge from engaging in the experiments, students must initially *recall* factual information. This type of question draws on the student's knowledge of previously introduced information. Table 1 provides a brief look at the six questioning levels that tap increasingly more demanding cognitive abilities.

Table 1
Six Levels of Post-Experiment Assessment Questions*

RECALL ↓ facts	CHANGE ↓ added information	GENERALIZE ↓ units of thought	ANALYZE ↓ think it through	JUDGE ↓ speculate	PROBLEM SOLVE ↓ apply to new situations
Tell what...	Tell what X means	Describe how X is used in example	Tell how X and Y are alike or different	Explain why X is better or worse than Y	Explain how you could make it better
Tell when...	Tell why (reason or purpose)	Tell what is an example of...	Explain why you think X did Y	Tell why you agree or disagree	Explain what you plan to do
Tell where...	Tell how X felt	Tell why it happened	Tell what is true/not true	Describe which you choose first/last	Explain what you think will happen next
Tell who or whose...		Explain what can be done	Tell what you learned	Explain what you think will happen	Describe a new thing that can be done
Tell which...					Describe what you can create
Tell how...					Describe how you would do X
Tell how many...					

*Read down

Program Results

The Head Start on Science and Communication (HSSC) Program was implemented in five large urban public school first-grade classrooms in Washington, DC, and Trenton, New Jersey, during the 1999-2000 school year. There were a total of 101 children in the sample population. Of these students, 98 participated in the pre-test (53 females, 45 males), and 85 of those children participated in the post-test (44 females, 41 males). The ages of these students ranged from 7 to 8 years old with a racial composition of 87% African American and 13% Hispanic. Results of the HSSC Program were derived from student performance on the "Unit Pre-Post Tests for Life, Earth, and Physical Sciences" and degree of implementation and classroom processes derived from classroom observations.

Twelve experiments are discussed in this section. Because of the late start of the program within the school year, not all 30 experiments could be completed by teachers and students. Generally, one demonstration experiment

with follow-up activities was conducted weekly.

The science and language concepts for each of the 12 experiments of life science, earth science, and physical science include the following:

- Changing Fish: change, adaptation, and variations among fish and their environments
- Coloring Celery: levels of water and absorption of plants
- Evaporating Liquids: wet, dry, and moisture associated with events
- Blowing Across: movement, distance, air, and wind
- Gathering Nature: plant and animal features for comparison and classification
- Finding Earth: varieties of environmental surfaces
- Growing Seeds: patterns, similarities, and differences in growth
- Making Plants: parts and wholes of plants and their functions
- Moistening Seeds: sunlight, moisture, and development of the seed
- Organizing Rocks: grouping characteristics and textures
- Bouncing High: height, movement, and force
- Bubbling Air: space, observation, and size

Implementation of the HSSC Program

The first-grade teachers in this study were chosen by the school principals after the teachers indicated an interest in participating in a science program. The first-grade teachers in the experimental condition followed the HSSC Program, providing standards-based curriculum with learning activity boxes for life science, earth science, and physical science. In addition, these teachers received technical support in their classrooms from an implementation specialist on an average schedule of two times per month. During the fall of 1999, 14 first-grade teachers in the targeted schools were observed to determine the degree of implementation in their classrooms on the 12 critical dimensions of the Adaptive Learning Environments Program (ALEM) of the Community for Learning Comprehensive (CFL) School Reform Model developed by Wang (1992). Degree of implementation scores are reflected in percent form, referring to the number of dimensions met within each category. The 12 areas for degree of implementation are (1) arranging space and facilities, (2) creating and maintaining instructional materials, (3) establishing communication and refining rules and procedures, (4) coordinating and managing support services and extra personnel resources, (5) record keeping, (6) diagnostic testing, (7) prescribing, (8) monitoring and diagnosing, (9) interactive teaching, (10) instructing, (11) motivating, and (12) developing student self-responsibility. An average score for all 12 areas is referred to as the degree of implementation (DOI) composite. Results indicate that in the fall, the average DOI composite for the 4 experimental classroom teachers was 67.30, and the average DOI composite for the 10 control classroom teachers was 81.44. In the spring, following implementation of the HSSC Program, the average DOI composite for the experimental group increased to 87.50, whereas the control group DOI composite remained steady at 81.73.

Table 2
Overall Degree of Implementation Changes among Groups

Group	Experimental Fall 1999	Experimental Spring 2000	Control Fall 1999	Control Spring 2000
Number of Classes	4	5	10	12
Mean	67.30 (25.16)	87.50 (11.99)	81.44 (18.53)	81.73 (25.19)
Change	-	+20.20	-	+0.29

Results indicate that teachers from the experimental classes increased degree of program implementation by approximately 20%, whereas the control classroom teachers made negligible change. Although the teachers in the experimental classrooms started out lower in degree of implementation, they achieved higher scores by the end of the school year than the control classroom teachers for arranging space/facilities, establishing/communicating rules, coordinating/managing support, record keeping, diagnostic testing, prescribing, monitoring/diagnosing, interactive teaching, instructing, and motivating students. The final two assessed areas, creating/maintaining instructional materials and developing student self-responsibility, were similar in degree of implementation scores (less than one point difference) between the two groups by the end of the school year.

Program Gains

The areas that indicated a gain in DOI from fall to spring for teachers with experimental classes included arranging space and facilities (8%), creating and maintaining instructional materials (40%), establishing and communicating rules (20%), coordinating and managing support (30%), record keeping (50%), prescribing (40%), monitoring and diagnosing (25%), interactive teaching (30%), instructing (17%), motivating students (15%), and developing student's self-responsibility (4%). In the control classes, the following increases were noted: creating and maintaining instructional materials (4%), establishing and communicating rules (7%), record keeping (10%), prescribing (7%), monitoring and diagnosing (1%), interactive teaching (14%), and developing student's self-responsibility (6%). Experimental classrooms made superior gains when compared with control classrooms in 11 of 12 DOI areas assessed.

Curriculum-based Pre- and Post-test Results

The "Unit Pre-Post Tests for Life, Earth and Physical Sciences" (Hammrich & Klein, 2000) were administered to first-grade children in five classes to determine growth in content knowledge. There were two questions asked for each experiment prior to and following program instruction. The first question for each experiment, labeled "A," was *factual*, based on factual recall of information. The second question for each experiment, labeled "B," was *application*, based on students' explanations of information. For each

question, students received a score of "0," indicating an incorrect response, or a score of "1," indicating a correct response. All pre-tests and post-tests were administered individually to students by the classroom teachers with the support of program staff during pre-test time. Table 3 provides a breakdown of scores for each type of question (A and B) for the 12 completed experiments.

Table 3
Gains from Pre- to Post-test Scores for Science Content Knowledge with 12 Experiments

Experiment Name	Number of Students	Mean Pre-test Score	Mean Post-test Score	Gain
Changing Fish-A	56	.38	1.00	.62
Changing Fish-B	56	.00	.91	.91
Coloring Celery-A	31	.35	.91	.55
Coloring Celery-B	31	.45	.97	.52
Evaporating Liquid-A	12	.17	.92	.75
Evaporating Liquid-B	12	.00	.92	.92
Blowing Across-A	17	.71	1.00	.29
Blowing Across-B	17	.59	1.00	.41
Gathering Nature-A	37	.43	1.00	.57
Gathering Nature-B	37	.00	1.00	1.00
Finding Earth-A	47	.70	1.00	.30
Finding Earth-B	47	.66	.96	.30
Growing Seeds-A	20	1.00	1.00	.00
Growing Seeds-B	20	.00	1.00	1.00
Making Plants-A	20	.20	1.00	.80
Making Plants-B	20	.00	1.00	1.00
Moistening Seeds-A	20	.10	.80	.70
Moistening Seeds-B	20	.00	.55	.55
Organizing Rocks-A	32	.34	.94	.60
Organizing Rocks-B	32	.00	.81	.81
Bouncing High-A	11	.64	1.00	.36
Bouncing High-B	11	.00	1.00	1.00
Bubbling Air-A	12	.50	.92	.42
Bubbling Air-B	12	.33	1.00	.67

Results indicate that there was a significant difference between pre-test and post-test knowledge beyond the $p < .05$ level for all experiments tested. Students in the HSSC Program made significant gains in content knowledge at both factual and application levels.

Gender Differences

There were a total of 53 female first-graders and 45 male first-graders who took the pre-test. Students engaged in self-paced investigations to complete the five levels of each experiment following teacher demonstrations. Post-testing took place when the student completed the entire experiment. Figure 1 indicates that the girls generally scored lower than the boys at pre-test time. In fact, there were only two experiments (#6—finding earth and #9—moistening seeds) in which they scored higher than the boys initially. However, post-test results revealed that the girls matched the boys on factually based questions for 7 of the 12 completed experiments and surpassed the boys on one experiment (#10—organizing rocks).

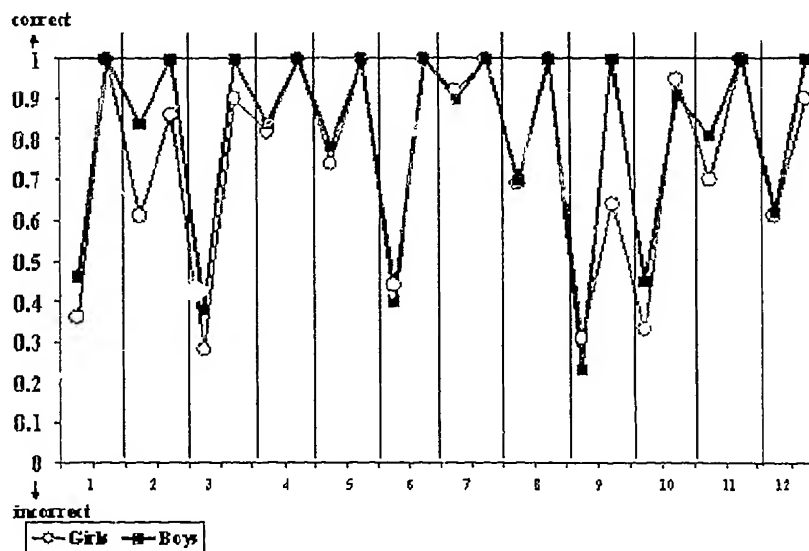


Figure 1. Factual pre- to post-test question means for girls and boys. The first dot within each numbered frame is the experiment pre-test mean score. The second dot within each numbered frame is the post-test mean score for that experiment.

Figure 2 compares girls and boys on application-type questions requiring higher-level reasoning and knowledge about science content. Girls scored lower than boys for half (6 of 12) of the experiments at pre-test time, considerably better than they performed on the "factual" questions reported in Figure 1. This result could lead one to believe that girls have a stronger ability to make associations and explain information than they do to recall science facts. This finding was recorded prior to any formal instruction with the

HSSC Program. After instruction and exploration using the program, post-test results revealed that the girls matched the boys on "application" questions for 8 of the 12 completed experiments and surpassed the boys on one experiment (#1—changing fish).

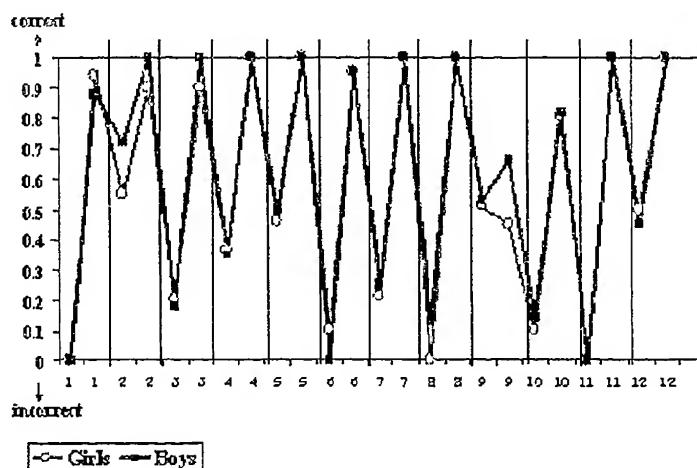


Figure 2. Application pre- to post-test question means for girls and boys.

Table 4 indicates that although the girls in the study scored slightly lower than the boys on both factual and application questions at pre-test time, their scores approximated the boys at post-test time with both girls and boys evidencing mastery of the material.

Summary of Head Start on Science and Communication Results

Results indicated that the HSSC Program had positive achievement effects for students who participated in the program. Overall, there was a significant difference between pre-test and post-test knowledge beyond the $p < .05$ level for all 12 completed experiments. Gains ranged from a low of 0.00 (an incorrect score) to a high of 1.00 (a correct score). Table 4 below reveals significant pre- and post-test changes beyond the $p < .05$ level of significance.

Table 4
Mean Pre- and Post-test Scores for Factual and Application Questions

	Factual Pre-test Means	Factual Post-test Means	Application Pre-test Means	Application Post-test Means
Girls	.567 ($n=53$)	.937* ($n=44$)	.092 ($n=53$)	.912* ($n=44$)
Boys	.610 ($n=45$)	.992* ($n=41$)	.270 ($n=45$)	.944* ($n=41$)

* Significance beyond $p < .05$.

Teachers reported improvement in their methods of instruction and classroom

management after using the HSSC Program. Results indicated that in the fall, the average DOI composite for the four HSSC experimental classroom teachers was 67.30, and the average DOI composite for the 10 control classroom teachers was 81.44. In the spring, following the HSSC Program, the average DOI composite for the experimental group increased to 87.50, whereas the control group DOI composite remained steady at 81.73.

The HSSC Program significantly benefited teachers in (1) arranging space and facilities, (2) establishing communication and refining rules and procedures, (3) coordinating and managing support services and extra personnel resources, (4) record keeping, (5) diagnostic testing, (6) prescribing instructional material, (7) monitoring and diagnosing individual needs, (8) interactive teaching, (9) instructing, and (10) motivating students. Students benefited in their comprehension of language and level of knowledge acquired as evidenced by the gains they made when answering both factual and application types of science questions previously unknown.

Conclusion

Gaining knowledge about scientific processes and principles while increasing cognitive, linguistic, and literacy skills is a challenging and important task. Not all children learn in the same way, and they may not learn equally well using only one method. Often, we find that it is best to combine more than one teaching method to help children learn to their maximum potential. To motivate children to explore, understand, analyze, and create, teachers may want to combine both explicit, teacher-directed methods and exploratory, child-centered methods. In this way, students are given basic information from which to begin and to peak their curiosity for continued exploration. The Head Start on Science and Communication Program unites language development and science inquiry with a multifaceted curriculum to meet the needs of teachers and children within our diverse educational arena of the 21st century.

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Appendix

Science Activity Index

The following index lists the activities and a brief description of the major concepts covered. Activities are grouped by life, earth, and physical sciences.

Life Science

1. *Listening Inside*: Things that make sounds vibrate.
2. *Guessing Boxes*: Using your senses, you can describe physical properties of different objects.
3. *Coloring Celery*: Water can be absorbed.
4. *Pouring Shapes*: You can change some materials' properties, but not all materials respond the same way.
5. *Melting Materials*: Water can change back and forth from a liquid to a solid and from a liquid to a gas.
6. *Feeling Water*: Using your senses, you can feel temperature for variations from hot to cold.
7. *Evaporating Liquids*: Water and moisture can disappear if left in an open container.
8. *Changing Fish*: Animals have external features that help them adapt and survive.
9. *Ordering Nuts*: You can describe and organize objects by their physical properties.
10. *Sensing It*: You can use your senses to identify properties of objects.

Physical Science

11. *Bouncing High*: You can vary movement of something by force.
12. *Falling Objects*: You can change the position of something by pushing it.
13. *Sticking Objects*: Magnets can make some materials move.
14. *Spilling Over*: Things can be done to change a material's properties.
15. *Bubbling Air*: Most living things need air.
16. *Floating Food*: Some objects can float, while other objects sink.
17. *Creating Pitch*: Sounds can be low or high in pitch.
18. *Coloring Line*: You can change colors by adding other colors to them.
19. *Measuring Sound*: You can use your senses to hear different sounds.

20. *Moving Hands*: You can create heat from friction.

Earth Science

21. *Finding Earth*: Different surfaces have different textures.
22. *Making Plants*: Plants are comprised of various parts that have different functions.
23. *Blowing Across*: Force of air can make objects move various distances.
24. *Organizing Rocks*: Rocks come in different sizes, shapes, textures, and colors.
25. *Moistening Seeds*: Plants need water and light to grow.
26. *Running Liquids*: Physical properties can be changed.
27. *Growing Seeds*: Plants share similarities and differences in features and growth.
28. *Sinking Boats*: Buoyancy and weight are factors in flotation.
29. *Gathering Nature*: Materials in nature have similarities and differences.
30. *Observing Objects*: Some objects' physical properties can be changed and others cannot.

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**Starting Child Care:
What Young Children Learn about Relating to
Adults in the First Weeks of Starting Child Care**

Carmen Dalli

Victoria University of Wellington

Abstract

This article describes how three toddlers in their first child care experience learned to relate to the adults in the center. The stories are constructed from data gathered as part of a qualitative case study project that explored the experience of starting child care from the perspectives of all the participants in this event: the children, the mothers, and the teachers at the child care centers. A critical polytextualist approach is used in discussing the three children's stories. Findings suggest that a primary caregiver system has much to offer in enhancing very young children's experience of starting child care.

Introduction

This paper focuses on how three young children learned to relate to the new adults at their child care center during the event of starting child care. Data for this paper are drawn from a larger case study project that explored this event as experienced by five children under 3 years old, their mothers, and one of their child care teachers (Dalli, 1999a).

Two approaches have dominated in studies of children starting child care: the traditional psychological approach, which sees the experience of starting child care as involving separation from the mother, and the social psychological approach, which considers the experience as one of adjustment to a new social setting.

In traditional psychological studies, the analysis has relied on notions from psychoanalytic theory, attachment theory, and the study of temperament. Psychoanalytic studies (e.g., Janis, 1964; Meltzer, 1984; Robbins, 1997) have suggested that separation from the mother on entry into child care results in a need for children to develop a strong relationship with the teacher, who serves as a substitute for the mother. In addition, entry into the group situation of an early childhood center has been seen to represent entry into a form of tribal culture for which the child has to learn the rules by relying on "primitive social impulses" (Meltzer, 1984, p. 100).

Studies from an attachment theory perspective have focused on studying the effect of using child care on children's attachment relationships with their mothers (e.g., Ainslie & Anderson, 1984; Bretherton & Waters, 1985). In a few cases, the effect of the existing attachment relationship between mother and child on the child's experience of starting child care has also been explored (e.g., Petrie & Davidson, 1995).

From a temperament theory perspective, adjustment to being in an early childhood setting has been explored as a function of children's temperament (e.g., Klein, 1991; Lewis, 1977; Marcus, Chess, & Thomas, 1972; Mobley & Pullis, 1991). These studies see adjustment as involving social relations with peers and with center adults as well as an individual's psychological response to a new setting.

Social-psychological studies of children starting child care as an experience of socialization have used teachers' and researchers' measures of children's adjustment to the new demands of the early childhood setting (e.g., Blatchford, 1983; Blatchford, Battle, & Mays, 1984; Feldbaum, Christenson, & O'Neal, 1980). These studies have concluded that new children did not take long to acquire the "necessary information about rules, rituals and power structure" (Blatchford, Battle, & Mays, 1984, p. 157) to operate as established group members (Feldbaum, Christenson, & O'Neal, 1980). In these studies, entry into an early childhood setting was also seen as an experience of transition that affected parents (mostly mothers) as well as children. These studies also found that during the transition, children's experiences were not homogeneous (Blatchford, Battle, & Mays, 1984; Jorde, 1984; Murton, 1971).

A recent approach has been to study children's early experiences of child care from the perspective of the children themselves (Pramling & Lindahl, 1991, 1994; Thyssen, 2000). Pramling and Lindahl adopted the phenomenological position that intentionality is an expression of consciousness and thus of experience. Through analyzing videotaped records of children's behaviors in their day care settings, Pramling and Lindahl arrived at an understanding of the infants' learning experiences. Similarly, Thyssen sought to explore how

infants acted in the "life-world" of the day care setting by focusing on the children's interactions with the adults, their peers, and the environment.

Research Approach

The overall study from which data in this study are drawn used a qualitative case study approach informed by principles from grounded theory (e.g., Charmaz, 1995; Hutchinson, 1998); narrative inquiry (Polkinghorne, 1988, 1995; Sarbin, 1986); deconstructivist analysis (e.g., Burnman, 1994); and insights gained from the methods used by Pramling and Lindahl (1991, 1994) and Thyssen (2000). The data used in this paper come from three of five case studies conducted in different licensed child care centers in a major city in Aotearoa/New Zealand over a total period of 10 months.

The three case studies used in this paper are those of Nina, Maddi, and Julie. Nina attended a half-day community creche (nursery school) with a parent-cooperative management and operating structure. Maddi also attended a community creche with a parent-cooperative structure; however, this center was open for both morning and afternoon sessions, and children could attend for either half-day or full-day sessions. Julie attended a full-day child care center fully staffed by trained personnel. In Julie's center, parent representatives sat on the management committee but did not participate in the daily program. The duration of each case study varied between 8 and 16 weeks, depending on the number of each child's orientation visits. Table 1 presents the names of the participants in the three case studies, their relationship, and the type of center that each child attended.

Table 1
Names of Participants, Their Relationship,
and the Type of Center Each Child Attended

Case Study	Child's Name and Age (in months at start of study)	Parent(s)	Teacher(s)	Type of Center
CS1	Nina, 16m	Jean	Sarah	Half-day community creche; community hall venue, parent-cooperative management
CS2	Maddi, 15m	Helen	Anna & Sam	Sessional community creche; community hall venue, parent-cooperative management
CS4	Julie, 18m	Lyn	Patti	Full-day; incorporated society

For each case study, the data gathered consisted of:

- researcher's fieldnotes of all the child's orientation visits (number and length of field visits varied per child) and of one visit each week for 6 weeks;
- video recordings of three events during each fieldwork visit (the child's arrival, departure, and one snack time);
- two interviews with the mother, one at the start of the child's period of sole attendance at the center and one 6 weeks later;
- two interviews with the teacher who was most involved in the child's settling-in period, one at the start of the child's period of sole attendance at the center and one 6 weeks later;
- journal entries by the mother or other home adult;
- journal entries by the teacher(s); and
- center documents that explained the process of settling in and other written material made available to parents.

These data were augmented by written notes of a number of informal conversations that took place throughout the fieldwork stage of the case studies. These notes became part of the fieldnotes.

In gathering data about the children's experiences of starting child care, the limited verbal skills of the children in the study meant that they were not able to tell their own stories. Thus, the stories presented in this paper are constructions from the combined data in each case study.

Narratives of Children's Experiences: Relating to the New Adults at the Center

The stories in this paper are narratives of children learning to relate to the adults in their center. (For narratives of the mothers' experiences of starting to use a child care center for their child, including their responses to the child care center's way of handling this experience, see Dalli 1999b.) In constructing these narratives, I saw my task as a process of relating "events and actions to one another by configuring them as contributors to the advancement of a plot" (Polkinghorne, 1995, p. 16). This approach is consistent with the methods of the second of two types of narrative inquiry identified by Polkinghorne in which the data consist of "actions, events and happenings ... whose analysis produces stories" (p. 6).

The story told about each of the three children is structured around a key phrase that emerged from the data as capturing the central theme of their story. In the case of Nina and Maddi's stories, the phrase was used by one of the adult participants who talked about the children. The title of Julie's story emerged from synthesis of the data about how Julie learned to relate to the teachers in her center.

Nina, Maddi, and Julie entered centers that operated under different policies about how the center adults should work with children. Nina started child care in a center where she was immediately allocated a primary caregiver; Julie

attended a center that had a firm policy that all staff looked after all the children; and Maddi attended a center that had no particular policy about this matter and the teachers operated from a practical principle of "going with the child." These policies were clearly articulated by the participating teachers in the case studies regardless of whether the center's policy existed only in practice or whether the policy was documented. Additionally, the policies were related to the individual teachers' views of best practice during the experience of helping a new child settle in. These views emerged as the teachers talked about the event of settling in during the two interviews held with the teachers as well as in their journal records and informal conversations. In this discussion, the teachers used *key phrases* in a way that appeared similar to Elbaz's (1981) images or mental pictures of good practice. In Elbaz's theory of teachers' practical knowledge, images are seen as the component of the teachers' practical knowledge that is most powerful in organizing that knowledge and making an impact on practice. Elsewhere I have argued that these key phrases or images seemed to form part of a "larger understanding individual teachers had about the nature of the settling-in event" (see Dalli, 1999a, p. 222). These larger understandings are called the teachers' *theories of practice* or the teachers' perceptions of their practice.

What emerges most strikingly in the stories in this paper is the consistency with which the patterns of interactions that children established with the center adults fitted with the center's policies and the teachers' expectations for how this pattern would unfold. These expectations were also part of the teachers' theories of practice.

Nina's Story: "Coming to Terms with Separation"

"Coming to terms with separation" was how Nina's mother, Jean, described her daughter's experience of starting child care. However, this phrase was also central to how Nina's teacher, Sarah, understood Nina's settling-in experience. In fact, Jean and Sarah told Nina's story in quite similar ways. For example, both women saw Nina's initial two visits as a great success; both agreed that throughout the process, the initial "success" appeared threatened by three breaks in Nina's attendance; and both agreed that at the end of the process, Nina had settled in very happily. In each of the two women's stories, there was also much positive comment on the way the other was handling the experience of Nina's settling in. Beyond these similarities, however, there were some different emphases that related to the different roles, and associated functions, occupied by the two women in relation to Nina. Thus, Jean's story focused on gauging whether Nina was happy or not and on tracing the ebb and flow of this happiness. Sarah, on the other hand, focused on how well she judged the relationship between her and Nina to be developing within the expectations of her theory of practice.

Nina was 16 months old when she started her orientation visits at a half-day community creche. The creche operated in the local community center from 9:00 a.m. until 1:00 p.m. each weekday. At the end of each session, all the equipment was cleared away so that other community groups could use the

center. The center was licensed for 20 children and employed 4 permanent part-time staff. One parent helper was scheduled on each day, bringing the ratio of adults to children to 1:5. At the start of the case study, the center had just decided to test a version of the primary caregiver system. This practice was explained in a letter to parents as meaning that each staff member would have "primary responsibility" for a group of "focus children."

Sarah's Theory of Practice: Weaning Them in

Nina's primary caregiver, Sarah, was very enthusiastic about the primary caregiver system, and her theory of practice about settling in a new child into the center was based on the principle that "it is better for a child to develop a deep relationship with one adult than a superficial relationship with four adults. When they're comfortable with one person, then they'll branch out" (CS1.TIS1.3.2a). (Note 1) Sarah also believed that the primary caregiver system gave the new child "four to six weeks of almost exclusive treatment," adding, "you can't expect that focused treatment from all the staff" (CS1.TIS1.3.2a). In Sarah's theory of practice, "focused treatment" was the mechanism through which a deep relationship would develop that would create confidence in the child to then "branch out" to others. Another aspect of Sarah's theory of practice was the notion that the teacher's role in settling in a new child was to "wean them in"; in her view, if children were "weaned in" as opposed to being "dropped into it" or "just dumped," they settled in more quickly (CS1.TIS1.5.1c). "Weaning them in" functioned as a key phrase in Sarah's talk about her practice, and its use here captures the essence of Sarah's theory of practice. Sarah also believed that the home adults should be involved in the process of "weaning them in."

The Story from the Data

The observational data in the fieldnotes, as well as the video records, showed that Sarah's theory of practice started to be enacted from Nina's first visit to the child care center. For example, it was Sarah who immediately welcomed Nina and Jean and became the main person to guide them around the center and follow Nina's cues about what interested her. Additionally, many of the interactions that Nina had with the adults in the center took place through the opportunities that Sarah either set up or allowed to unfold. In the process, Sarah also started introducing some of the center "rules" about different activities. For example, the following extract shows how Sarah's actions provided guidance about how painting was done at the center. Having rolled up Nina's sleeves in preparation for painting at the easel, Sarah later noticed that Nina's painting was spilling over onto a second easel nearby:

09.24 Sarah leaves Jean's side and goes to the painting area.

Sarah: "Oh, two [paintings] Nina!"; she squats down close to Nina and writes NINA with a thick crayon at the top of one picture and then on the other saying, "Let's write 'Nina' again. Here you go. I think I'll have to get you some more paint and paper in a minute." Sarah walks back to

Jean's side. (CS1.fieldnotes, orientation visit 1/8)

Later still, on noticing that Nina no longer had her apron on and was heading back to the painting area, Sarah went over to Nina saying:

09.30 "Shall we go and wash your hands?" (Nina's hands are covered in paint.) Sarah takes Nina's hand. Nina goes with Sarah towards the bathroom but on the way catches sight of her mother sitting at the puzzle table and veers towards her and sits in her lap. Sarah says to Jean, "I'll tell you what: I'll bring a wet towel to her."

Sarah goes off to the bathroom area and comes back with a wet paper towel and, squatting, wipes Nina's hand with this. Nina toddles off to the collage table. Sarah, still squatting, says, "Oh, she's gone now—here, she's back," as Nina returns to Jean and Sarah holding a gluey paintbrush. "Nina, I think you should have an apron on," says Sarah.

"No," says Nina and toddles off to the painting easel again, leaving the gluey paintbrush behind and picking up a thick crayon instead.

Sarah says to Jean and another teacher nearby, "I'm just going to let her wander about." (CS1.fieldnotes, orientation visit 1/8)

A later attempt by Sarah to entice Nina to wear the apron by holding up the apron from about a meter away and proffering it to Nina was also refused by Nina, who shook her head in response. Sarah commented about the refused apron to another teacher, "She might not want it—I'm not going to force her—I don't want her to be upset" (CS1.fieldnotes, orientation visit 1/8, 09.34). After yet another refusal of the apron less than an hour later, Sarah said in a calm way, "No. We'll get there in time" (CS1.fieldnotes, orientation visit 1/8, 10.12).

Apart from Nina's clear eagerness to explore her new environment, these very first interactions between Nina and Sarah indicate that for the most part, Nina appeared receptive to guidance from Sarah. On her part, Sarah followed Nina's cues about her preferred activities and at the same time started introducing some of the "rules" that accompanied them, such as putting on an apron and having one's name printed on the drawing paper, as well as the hand washing that followed the painting. Sarah's attention to Nina's cues meant that she was not prepared to force the issue about the wearing of the apron once Nina had firmly indicated her opposition to doing so. In this instance, Sarah put her goal of not upsetting Nina ahead of the rule about the apron, which she said would fall into place in its own time. Her wish not to upset Nina was also apparent in her decision to abandon the bathroom trip in favor of the wet paper towel solution. Sarah's activity with Nina thus indicates a balance of guidance (into the ways of the center) and respect, as well as a willingness to make some allowances for the new child in the routines.

During this initial session, Nina was involved in numerous other contacts with

Sarah, including when Sarah defused a potential conflict with an older girl over which child had prior claim to a doll's pushchair (stroller) and when she guided Nina through such morning tea routines as washing hands before eating, sitting on a chair to eat her food, not eating food that fell on the floor, and drinking from one's own cup (CS1.video records, orientation visit 1/8). From these behaviors, it is possible to hypothesize that Nina may have understood Sarah's role as being one of mediating Nina's peer interactions as well as of inducting her into a range of rules about center life.

Over the succeeding weeks, this pattern of constant attention from Sarah to Nina's focus of attention was maintained, and Nina continued to accept Sarah's approaches. Early during the second visit, Nina's behavior also suggested that she was beginning to be willing to "use" Sarah as a source of comfort: When Jean temporarily left the outside play area and Nina started to cry in protest, Sarah approached Nina, who promptly lifted her arms towards Sarah to be picked up (09.27). Sarah's response to such approaches from Nina was consistently warm and accepting, and she wrote about such instances in her journal as indicating that Nina was feeling "at ease" with her (CS1.TJ.2.23-24).

Nina's early acceptance of Sarah and Sarah's continuous attentiveness to Nina's cues were again apparent when Nina started having brief periods at the center on her own. On the first of these occasions, as soon as Jean indicated that she was ready to leave, Sarah positioned herself close to Nina at the dough table and waited for Jean to initiate the departure. In the fieldnotes, this first separation episode was recorded in this way:

10.15 "So I'll just say goodbye to her," says mum to Sarah—she bends towards Nina across dough table and says, "Nina, sweetie, goodbye, bye Nina." Nina is very absorbed in dough play, however, and does not really look up. "Bye, bye, ta ta," says mum again. But there's still no response from Nina. Mum says, "I sort of feel I should get some recognition from her that I'm going," and tries again. Mum waves and waves, but there still is no acknowledgment by Nina. Mum tries again with no response, so mum leaves without Nina having realised this. Sarah and Nina play at rolling the dough and pretending to eat little balls of it. (CS1.fieldnotes, orientation visit 3/8)

For the next few minutes, Nina remained quite happily occupied in dough play with Sarah, sometimes watching with interest, with her left hand on Sarah's knee (09.44), as Sarah made some dough "snakes" and at other times rolling out dough herself. When one of the dough "snakes" fell onto the floor, Nina happily complied with Sarah's request to pick it up. Nina gave the first sign that she might be aware of her mother's absence about 10 minutes after Jean's departure when she looked up from the table and looked around the room searchingly. This behavior led Sarah to comment quietly to me, "Did you see her searching?" As Nina's attention was caught by a doll's pushchair, however, the moment passed, and it was not till 3 minutes later that Nina suddenly again appeared to become aware that her mother was absent. This "realization" was recorded in this way:

09.52 Nina walks off towards the hallway, a paintbrush in her hand and back again to the easel—Sarah takes the paintbrush off her, picking up an apron and saying, "Oh, Nina," looking at her paint-covered hands. Nina turns away and walks off again towards the hallway and on towards the front door.

09.53 Nina starts to cry at the front door and looks "lost" as if she has just realised that mum is not around. Sarah follows her in the hallway; she picks Nina up and takes her to bathroom to wash the paint off her hands. Sarah talks about the hand washing and the paint coming off as they do this. When they finish, Nina has stopped crying, and Sarah puts her down on the floor; but Nina walks back to the centre front door and cries again.

09.54 Sarah follows; she picks Nina up and gives her a kiss—Nina stops crying—they walk to the blue carpeted room where an older boy is playing with a toy dog. Sarah talks to the boy and asks if Nina can look at his toy dog—Nina smiles broadly at this and is now distracted by the dog and then the flexi-tunnel and then the Lego firehouse that Sarah starts to play with. (CS1.fieldnotes, orientation visit 3/8)

While it is not possible to be sure what Nina's "real" intentions were in going to the center's front door during these incidents, it is difficult to escape the interpretation that Nina had realized that her mother had left the center and that she possibly wished to follow her. I noted this interpretation in my fieldnotes. Sarah had a similar interpretation—both in her comment about Nina's "searching" behavior and her immediate actions to distract Nina while washing her hands, and in her actions to comfort and distract her again with the affectionate kiss and playing in the blue room.

What was also interesting in the interaction between Nina and Sarah during the first trial separation session was the change in the behavior between Sarah and Nina when Jean was not present. As I noted above, Sarah had been involved in a variety of interactions with Nina while Jean had been present; however, true to her principle that "when mum is here, I'm not the primary caregiver" (CS1.TIS1.6.2b), Sarah had kept largely in the background and had allowed Nina to explore the center alongside her mother. During this session, however, from the time of Jean's departure to her return, Sarah was constantly at Nina's side. This proximity did not appear to perturb Nina, who seemed to easily accept comfort from Sarah and to let her "take her [Nina's] mind off mum not being there" (CS1.TJ. 3.43). There were no further obvious signs that Nina was conscious of her mother's absence during the first trial separation session, although the reunion with Jean was, from an observer's point of view, an emotional one, with Jean's face looking flushed with pleasure and Nina's face beaming with delight. Sarah's account to Jean of Nina's response to the separation was factual in detail and included the evaluation that Nina had been "excellent." Jean looked at me for verification, and I smiled and nodded, wondering, not for the last time, about how much I should become involved in these interactions.

What Nina Learned: "Developing a Deep Relationship with Sarah?"

The proximity to Nina that Sarah maintained consistently in Jean's absence during the first trial separation period was repeated during the second trial period of separation, which was seen as another "successful" day by Sarah and Jean. This time, Nina watched her mother's departure and looked composed and not at all perturbed by it, although in my fieldnotes. I also described her as "solemn, as if she understands what's going on" (CS1.fieldnotes, orientation visit 4/8, 09.42).

An indication that Nina may have started to feel her mother's absence came about 10 minutes later when, as she watched another mother leave by the front gate, Nina started to cry. Sarah was immediately at Nina's side, saying:

09.23 "Does that remind you of your mum? Let's go play on the rocking horses." Sarah picks Nina up and carries her to the blue room. Sarah tries to place Nina on a rocking horse, but Nina kicks her legs and resists this. (CS1.fieldnotes, orientation visit 4/8)

It was noticeable that for the rest of the session, Nina stayed in Sarah's arms or on her lap, suggesting perhaps that a connection existed between her awareness of her mother's absence and her desire for proximity to Sarah. This proximity was also welcomed by Sarah, who wrote of this session that she and Nina were "developing a really happy positive rapport" (CS1.TJ.4.24) consistent with the "deep relationship" that Sarah believed a good settling-in experience required. Nina was still at the morning tea table when Jean returned after an absence of 45 minutes. Nina immediately spotted her and raised her arms with a whimper of request to be picked up. Nina had a long and warm cuddle with her mother, her face beaming with delight, and she remained in her mother's arms till they left the center about 10 minutes later.

It is possible to hypothesize from these observations that Nina had learned to relate to Sarah as the adult who would provide her with help and comfort in the center environment. Likewise, it is possible to hypothesize that Sarah's intention to become the one person with whom Nina developed the initial deep relationship from which she could later branch out was being achieved. This hypothesis/interpretation was supported during the following visit when after Jean's departure, Nina was quite tearful and had her first period of sustained crying, refusing to be distracted by Sarah's offers of toys or activities. This behavior lasted for about 4 minutes, after which Nina again started taking some interest in activities around her but remaining close to Sarah throughout the session.

This pattern of behavior was repeated 2 weeks later when, after having missed her visits for 2 weeks, Nina seemed determined to keep hold of mum's hand while Jean remained at the center. On the first two visits after this break, Nina had difficulty saying goodbye to her mother and cried strongly when Jean left. She subsequently remained close to Sarah throughout the sessions, fluctuating

between bouts of tears and periods of calm. Both sessions concluded with Sarah deciding to call Jean to collect Nina early. These two sessions caused Jean to feel quite anxious; she said in our first interview that she felt that Nina had "suddenly rejected it quite strongly" (CS1.PIS1.8.13). However, my fieldnotes of these two sessions showed that despite the bouts of crying that Nina experienced, and her reluctance to engage in activities on her own, there were many instances when Nina appeared willing to accept comfort from Sarah and did not appear to reject Sarah at all. I wrote:

10.05 Sarah takes Nina to dough table and starts rolling out some dough. Nina observes—then she picks up dough cutters and starts cutting up shapes. She's beginning to look more settled now and is still on Sarah's lap.... "Push the gingerbread man down," says Sarah to Nina. Sarah puts her own hand on top of Nina's and helps her press down the cutter—Nina stands up now, looks suddenly lost, she whimpers, and Sarah picks her up again—Nina accepts this and now watches an older child at the dough table as she continues to play with the dough.

10.15 Sarah carries Nina to the kitchen; Nina gives her first smile since mum left, then she looks at me (Carmen) and cries! Another teacher goes up to Nina and pats her hand—but Nina still cries.... Sarah takes Nina back to the dough table, and Nina gets involved in this quite happily again.

10.17 Nina's still in Sarah's lap—Sarah says she'll let another teacher get morning tea—"I'd rather make sure she's [Nina's] ok," she says. (Nina in fact seems perfectly fine as long as she is in Sarah's lap, but if Sarah tries to put her down, she whimpers.) Nina gives a small whimper, and Sarah stands up and carries Nina to the morning tea table. (CS1.fieldnotes, orientation visit 6/8)

My perception that Nina was able to be comforted by Sarah was shared by Sarah, who commented on this behavior in her own journal, stating also that Nina "kept up her interest in the children and activities throughout the morning" (CS1.TJ.6.20-34). Nonetheless, both Jean and Sarah were concerned about Nina's experience on these two days, and, having talked over the breaks in attendance that Nina had had, they decided that more frequent visits might be helpful; thus they agreed to schedule an extra visit for the following day. My fieldnotes of this visit suggest that Nina's behavior was closer to her earlier explorative and keen style; at the same time, she remained determined to retain proximity to Jean, whom she pulled by the hand around the various activities in the room. Noting this behavior, Jean said to me halfway through the session:

Jean: "I'm not getting much distance between us."

Carmen: "No, but she's certainly enjoying all the activities."

Jean: "She was happier getting here this morning."

(CS1.fieldnotes, orientation visit 8/8, 09.51)

In summary, these observations suggested a "working hypothesis" that over

the period of visits to the center, Nina had worked out that she could not assume that her mother would stay at the center throughout her time there; her grip on her mother's hand may have been Nina's way of saying that she preferred to have her mother remain at the center with her. Nonetheless, Nina also appeared willing to accept Sarah as a source of comfort in her mother's absence. An incident during Nina's next visit to the center gave support to this idea, which Jean expressed as Nina needing to "come to terms with the separation" and to develop trust in Sarah. In Sarah's eyes, the incident appeared to mark a "turning point" and subsequently acquired the status of a landmark event in her story of Nina's settling in.

A Landmark Event: Accepting the Separation—Accepting Sarah?

Nina spent all of the next session at the center without Jean. When Jean passed Nina over to Sarah, Nina protested with a determined cry. Nina calmed down somewhat when Jean was out of sight, but for the next 15 minutes, Nina continued to break into small crying bouts between periods of interest in different activities around the center to which Sarah carried her. Suddenly, Nina fell into a sobbing sleep on Sarah's shoulder. Another teacher tried to help Sarah shift Nina's weight from her arm, but Nina woke up and gave such a piercing cry that Sarah continued holding her herself throughout the sleep. When Nina woke up half an hour later, she still seemed ready to cry at any moment and refused to leave Sarah's side, showing clearly that she preferred to be with Sarah than with any of the other teachers. However, over the following 15 minutes, Nina's behavior slowly changed, and although she did not actively participate in any of the activity areas, she again started to show an interest in what was going on around her, smiling at Sarah from time to time and generally looking quite content. Sarah recorded her thoughts about this session as follows:

Just before morning tea she went to sleep in my arms. She obviously felt good enough with me to do that ... when she woke up we were outside.... I felt a difference in her mood, and it was not long before she was sitting with me, without crying, enjoying one of the other children's block building.... she had become a lot more relaxed, closer to the stage she was at before her long break from the centre. She wanted me there ... our relationship is definitely there. (CS1.TJ.8.29-31; 36-41; 51)

The marked difference in Nina's mood after her sleep, which Sarah noted, was something I also noted in my fieldnotes. As I watched Nina sit close to Sarah, swinging her feet on the edge of the sandpit and smiling as she observed Sarah trickling sand through her fingers, I found myself saying to Sarah, "It's a real breakthrough now, isn't it" (CS1.fieldnotes, sole attendance week 1, 11.28). Sarah agreed. In both our eyes, it seemed that for the first time since Jean's departure that morning, Nina appeared to have reached the state described by Jean as "com[ing] to terms with the separation" and to "have developed trust" in Sarah (CS1.PIS1.2.2). The sense that Nina had learned to "trust" Sarah emerged clearly in Nina's refusal to leave Sarah's side as well as in her definite preference to stay in Sarah's arms while she slept.

Following this session, Nina's behavior in the center suggested a continuing increase in ease. From maintaining closeness to Sarah as she engaged in activities during the second week of sole attendance, Nina progressed in her third week to giving up Sarah's attention when Sarah moved to comfort other children and to initiating interactions with teachers other than Sarah in her fourth week. In the case description, I summarized my fieldnotes from Nina's session during her fourth week of sole attendance in this way:

Nina was so confident and relaxed that it was hard to believe that this was the same child who three weeks earlier had to be carried around the centre by her primary caregiver for the whole period she was there. She moved about the centre with great familiarity ... her confidence in interacting with adults was also clearly more advanced than on previous visits: While she still primarily sought out Sarah as her preferred teacher, she also initiated interactions with three of the other centre staff.... But perhaps most significant of all was Nina's easy acceptance of her mother's departure at drop-off time: she confidently accepted Jean's goodbye kiss and resumed her block play straightaway. (CS1 case description, p. 9)

The story from my fieldnotes of how Nina related to Sarah over the time when she started to be at the center without Jean triangulates with Sarah's journal accounts and with Jean's view of events reported in the interviews. Likewise, Nina's experience appeared to be in line with Sarah's prediction in her theory of practice that through the "primary caregiver" system, children developed a "deep relationship with one adult" from which they later "branched out." Thus it seemed that Sarah's enactment of her theory of practice acted as a strong "canalizer" (Valsiner, 1985; Valsiner & Hill, 1989) of Nina's behavior into the ways of interacting with the center adults that Sarah expected and guided Nina towards.

Julie's Story: Who Looks after Me Here?

Julie was 18 months old at the time of the study, the youngest among 21 children ages up to 5 years in a full-day center staffed by five full-time teachers. The center had a firm policy that all staff were responsible for all the children. At the time of negotiating access to the center, Patti, the supervisor of the center and the participating teacher in this study, justified this policy on the basis that it avoided extra stress on children if "their" staff member was absent.

The stories that Julie's mother, Lyn, told about her daughter's settling in relied very heavily on her observations of Julie at drop-off and pick-up times. These times were Lyn's main sources of information because, after staying with Julie during the first two orientation visits, the third visit swiftly became one of sole attendance when Patti and Lyn agreed, 20 minutes after Julie's arrival, that Julie seemed ready to stay for a session on her own. In Lyn's story of her experience of Julie's starting child care, a strong theme was the difficulty she

had in working out whom to speak to about Julie on a daily basis (see Dalli, 1999b). As an observer, it seemed to me that the lack of one consistent person to regularly relate to was also, for a time, a strong feature of Julie's settling-in experience. The observational data from my field visit during Julie's second week of sole attendance illustrated this difficulty strongly, with many instances recorded when Julie seemed confused about which of the adults would be the best person to approach for assistance or comfort. These data provided the phrase that I have used as the title of Julie's story—"who looks after me here?"

Patti's Theory of Practice: Providing "Extra Teacher Support"

Patti's theory of practice about settling in new children emerged as constructed around the recurring phrase of needing to provide "extra teacher support" within a structured secure environment so that the new children would eventually gain control. A strong principle within this theory of practice was that each child is different and that the teacher's role was therefore to pick up the cues from the child about when this support was needed. The ability to pick up cues from the child was seen by Patti as largely acquired through experience. In Patti's theory of practice, as in the center's written policy on how to handle a child's settling in, it was not necessary for one adult to be allocated primary responsibility for a child's settling in.

The Story from the Data

Julie had a full-time place at the center, where she quickly became seen as

a happy little girl—she had several "topples" outside when running, and she just picked herself up and laughed—she's confident enough to move from one place to another without teacher assistance. It's great that she enjoyed morning tea—often children don't want to eat at first.
(CS4.TJ.2.18-23)

The video records and my fieldnotes of Julie's visits to the center also support this picture. Although Julie did sometimes look hesitant on arriving at the center, within seconds, she typically became interested in her environment; and from the very first visit, she interacted with all the teachers who initiated contact with her. Within the first session, she had spent time with, and accepted direction from, three of the center adults. For example, she allowed one of the teachers, Heather, to pick her up and take her to the sandpit without complaint and accepted the offer of a bucket and spade from her. Later Julie accepted Heather's suggestion of "going for a walk" and happily allowed herself to be carried to the outdoor slide; she subsequently slid down it in Heather's lap. A few minutes later, Julie allowed Carla, another teacher, to help her get off her trike, and later still she went with Patti to the bathroom to wash her hands before afternoon tea. In her first journal record, Julie's mother, Lyn, commented:

After the first 10 minutes, Julie hardly looked in my direction and seemed quite unfazed by the place. I thought she might find it overwhelming because of the number of adults and children, but it was very relaxed, calm, and friendly. (CS4.PJ.1.25-29)

Julie's response to the center adults remained open and responsive during the second and third visits, and she again interacted with whichever teacher was present or available. In the following week, however, I became aware that a different set of dynamics was operating between Julie and the center adults; these dynamics seemed associated with the center policy that all teachers should be responsible for all the children—a principle also evident in Patti's theory of practice.

What Julie Learned

During the fieldwork session of the second week of Julie's sole attendance, I noticed that on a number of occasions, Julie appeared to make approaches to specific adults for attention, especially to Maria and Diane, for whom she seemed to have developed a liking. However, her initiatives were not responded to by the adult to whom they were addressed. For example, when Maria walked into the center carrying the center's shopping, Julie looked at her beseechingly and started to cry (09.32), prompting Patti to say, "Did Maria remind you of mummy, did she?" Maria herself walked on to unpack her shopping, giving no indication that she had noticed Julie. Later, Julie went up to Maria at the net climbing frame in the outside play area and lifted her arms to be picked up; Maria did not pick Julie up and instead re-directed her to the climbing frame by asking her if she wanted to go on (11.48) and helped her to get on the frame. After a brief time there, Julie started to cry and called out for "mummy," so Maria took her off the climbing frame and sat Julie down on the lawn beside her. When another child went up to Maria and had a cuddle in Maria's lap, Julie again started to cry, stood up from her place on the lawn beside Maria, and then sat on Maria's feet. Maria started to rock her feet so that Julie looked like she was riding on them, but Maria still did not pick Julie up. Two other approaches for attention which Julie made to Maria during the day were more firmly deflected, once by Patti and once by Diane. On the first occasion, Patti, hearing Julie give a call of delight as she followed Maria, said as she picked Julie up, "It's Maria's lunch break; no Julie. Maria needs her break" (12.38). On the second occasion, as Julie caught sight of Maria in the sleep room and made a beeline to follow her (12.59), Diane intercepted her and carried Julie to the bathroom. In addition, Julie spent the first 20 minutes of this session with Diane, who during this time appeared very responsive to Julie, but, less than an hour later when Julie followed Diane to the kitchen crying, Diane ignored her totally (09.52), and it was Patti who picked her up.

All this interaction took place against what Pontecorvo (1998) has called a kind of "backstage stream of talk" during which children are spoken of as objects while they are still present. According to Pontecorvo, this type of discourse is one way through which children are socialized. During this session, the "backstage stream of talk" that occurred in Julie's hearing

included a number of exchanges among the teachers about which teacher was in favor with Julie that day. For example, while Julie was in the kitchen with Diane at the start of the session, Carla, one of the other teachers, arrived, and Patti caught her up with where things were at for the day. This synopsis included the statement that Julie had fallen asleep after Carla had finished work on the previous day and that Patti had "been out of favor" with Julie, adding a few minutes later, "She only took to Diane yesterday afternoon, didn't she?"

A few minutes later, Julie was in the painting room with Diane, doing some paper cutting, when Patti joined them. When Diane left the room shortly afterwards, Julie looked up, needing some help with the scissors, and Patti went over to Julie and helped her hold the scissors correctly. For the next 30 minutes, Julie stayed with Patti, interacting easily and quite happily except for a few instances when she put her fist in her mouth—a behavior that Patti interpreted as Julie having teething problems.

During this time with Patti, Heather, another of the teachers, walked into the room and commented teasingly to Patti, "We're in favour today, Patti?" Patti started to say, "Well—we've sort of . . .," leaving Heather to finish the sentence off for her with "... got an understanding?" (CS4.fieldnotes, sole attendance 2, 09.27). The two teachers talked some more about Julie's teething trouble and about Lyn's reports earlier that day of Julie's disturbed nights. Later still, over the lunchtime routine, when Julie refused an additional cup of milk from Patti, Patti commented, "Have you gone off me again, have you?" (12.19).

What emerges from these interactions is that the teachers were very aware that children developed preferences for certain adults; indeed they were aware enough to gently tease each other over it. It seemed to me as observer that on that day, Patti was making serious efforts to become more accepted by Julie. In the process, it also seemed that Diane was taking care to ease out of being the "preferred caregiver" (hence incident at 09.52), a status only established on the previous day; Maria's lack of response to Julie might have been similarly motivated (11.48, 12.38, and 12.59). In a center with a clear policy about not having specific teachers assigned responsibility for specific children, the accepted rationale for this behavior by the teachers appeared to be that Julie needed to have a relationship with all the teachers. Within this context, it was undesirable for any individual teacher to cultivate the preferences shown by the children. However, from the point of view of how the child might have experienced these behaviors, one could argue that the child's wishes for whom to relate to were thwarted. At times, Julie was stopped from being with the person she would have preferred to be with.

The other message for the child from all these interactions could be that one did not always get what one wanted—the adults set the rules, and as a child you were expected to fit in. Julie seemed to learn to understand this rule because, as the sessions rolled on, the data showed that Julie did gradually fit in with the expected way of relating to the center adults and accepted all the teachers as ones with whom she happily spent time. Thus, over the 6-week

period of Julie's case study, Patti's early journal comments that "she has shown a preference for Maria and Heather, going up to Maria when she was tired and not very happy" (CS4.TJ.4.14-18) and "Julie is feeling her way—she has shown a preference for Maria most of the day and sometimes Heather" (CS4.TJ.6.13-15) gave way to phrases like "Julie related well to all the teachers today" (CS4.TJ.9.18-19) and "she is feeling OK about the staff—going to all of us at different times" (CS4.TJ.10.19-20).

It seems reasonable to hypothesize from this evidence that the "backstage stream of talk" (Pontecorvo, 1998) that occurred around the issue of which teacher was in favor with Julie, together with the way that the adults withheld their attention from Julie to allow a "less-preferred" adult to step in, both worked to socialize Julie into fitting in with the center's expectations about how children should relate to the center adults.

Maddi's Story: "Latching on to Sam"

Fifteen-month-old Maddi was described by her mother, Helen, as

on the whole, a happy sort of kid. When something new comes along, her first reaction is to take it all in. I've seen that in just little things like when I first took her swimming—she was fairly reserved about it, but now she loves it. So when I took her to the child care centre, I did expect her to be a bit subdued. (CS2.PIS1.10.1)

This picture of Maddi drawn by Helen in our first interview coincided with the view that one of the teachers in this case study, Anna, formed of Maddi as "a very quiet little girl who may have found the size of the group overwhelming" (CS2.TJ.1.6-7) and "quite a reserved child, although she is not timid" (CS2.TIS1.9.3b). It also coincided with my own view of Maddi's general stance on arrival at her child care center as being watchful and intensely observant but distanced from actual involvement with people or activities. "Watchful" was a word that Helen also used to describe her daughter's attitude on arrival at the center; she further described her as "quiet," "crowded," and "overwhelmed."

Maddi's center did not operate a system of primary caregiving, and the interviews with Maddi's teachers revealed that the center's policy on helping children settle in existed in the practice and talk of the teachers but not in the center documentation. The teachers described the policy as a flexible one that treated each child as an individual. When I sought access to the center for the purpose of the case study, one of the teachers, Anna, volunteered as the teacher participant, seeing the case study as an opportunity to practice her observation skills. However, as the case proceeded, another teacher, Sam, emerged as Maddi's preferred caregiver, and she subsequently became the second teacher participant in this case study. This story is about Maddi's choice of Sam as her preferred caregiver, or as Anna put it, about how Maddi "eventually latched on to Sam" (CS2.TJ.5.9-10).

Anna and Sam's Theory of Practice

The theory of practice that emerged from the talk of the two teachers most involved with Maddi's settling in included two major principles. One principle was that as a teacher, one must "go with the child" or "follow the child's lead" about which adult the child preferred to spend most time with. The second principle was that the teacher should be flexible and recognize that the child has an overriding influence on the type of relationship that can develop between the teacher and the child. In line with these principles, Anna and Sam described their approach as one in which they "played it by ear" (CS2.TIS1.3.2c).

The Story from the Data

During the first orientation session, Maddi and her mother were approached by both Anna and Sam at different times; Anna made contact with them seven times and Sam five times. Anna was the one who greeted Maddi and her mother on arrival and took them on a tour of the premises, explaining where the children's bags and coats were kept, where the toileting area was, and various other organizational details. Throughout this time, Anna addressed herself primarily to Helen, and her only direct comment to Maddi was the question "Do you want to find something to do?" as they walked back from the changing area to the main room. Anna then switched back to talking to Helen before she was distracted by another mother who wanted to have a quick word with Anna. As Anna made a note of something this mother said, Helen wandered off with Maddi around the different activities. Anna approached them again about 20 minutes later when Helen had settled down with a book and was reading to a group of children around her:

09.29 Anna comes over to Maddi and Helen. "How's it going?" she asks. Helen smiles at her and continues reading to the children. Anna picks up a wooden threading board and catches Maddi's eyes. Maddi smiles back, and Anna asks, "Do you think that's funny? Here you are"—she hands the threading board to Maddi and moves away to the table by the front door again. Maddi loses interest in the threading board and looks around. (CS2.fieldnotes, orientation visit 1/6)

This brief contact between Maddi and Anna was typical of the way that they interacted during this session: there was no real engagement in sustained interaction. By contrast, Sam's interactions with Maddi, while fewer in number, were sustained for longer periods and appeared to engage Maddi's interest. For example, in the following excerpt from video records of the morning tea routine during the same session. Sam took the initiative to provide some guidance for Maddi about the expected behavior during morning tea time and later also helped Maddi locate her mother when Maddi looked lost. The excerpt starts at the point when the children had been sitting down having crackers, fruits, and drinks but Maddi had left the table and was wandering about in the hallway pushing a cart and eating a biscuit:

10.16 Sam leaves her place at the table and goes towards Maddi. She gently picks Maddi up and takes her back to the table. Maddi protests, and Sam says, "You put your biscuit down there" and guides her hand in placing the biscuit on the table. Sam then leads Maddi back to the pushcart. But Maddi doesn't want this any more and struggles away from it. "Hard for you to understand, isn't it?" says Sam and takes her back to the table where Helen still is—she gives Maddi's cracker back to her saying, "Here you are—you sit with your food with the other kids."

10.18 Sam and Helen chat; mum rubs Maddi's back in a caress. Sam and Helen are squatting; Sam says to Maddi, "I do like your buttons."

10.35 Sam now sits down in a chair next to Maddi. Sam chats to the other children nearby. Maddi stands up beside her chair—she is following her mother with her eyes as Helen walks to the kitchen carrying the dirty morning tea plates for washing up. Maddi leaves the table and follows her mother and catches hold of her leg. A few seconds later, she walks back down the hallway and into the main room and looks around as if bewildered. Sam notices and calls out her name. Maddi turns around to face her.

10.36 Sam walks up to Maddi and holds out her hand to her, pointing in the direction where mum is. (This action is clearly also a request to Maddi to turn back from the hallway and join the other children in the main room.) Maddi seems to understand; she walks to mum (who is now at the table) and hugs her legs. (CS2.fieldnotes, orientation visit 1/6)

In this excerpt, Sam's attentiveness to Maddi's focus of attention emerges clearly. Beyond guiding Maddi into some initial rules about eating at the table and not walking around with food in her hands, she also watched what Maddi's interest was and helped her locate her object of attention when it looked like Maddi may have temporarily lost her bearings in relation to Helen.

In the second orientation visit, Sam again spent extended time in interacting with Maddi during which she gave Maddi an empty chocolate box with bottle tops inside it, which Maddi explored with interest (09.51); joined in telephone play with her (10.45); and accepted a cup from her and pretended to drink (10.55). By comparison, when Anna approached Maddi and Helen, she again mostly spoke to Helen. This pattern of interaction between the teachers and Maddi continued in the following two sessions, with Anna generally seeming to direct her contact to Helen and with Sam being more focused on Maddi. In the first interview that I had with Anna, a possible explanation for the way Anna behaved during these sessions emerged in Anna's statement that she saw her role in the center during the time that Helen accompanied Maddi as "helping mother to feel relaxed and welcome so she'd be happy to involve herself with Maddi and other children" and not liking to intervene when mum

was around: "I don't like to force it unless the child shows she wants to go away from mum" (CS2.PIS1.10.6). In analysis, Anna's balance of focus towards more attention to Helen rather than Maddi may have contributed to Maddi's developing a more open attitude to Sam rather than towards Anna. This attitude first started to emerge in Maddi during the fifth orientation session when Maddi had her first period of being at the center without Helen.

The leave-taking during the fifth orientation was a prolonged and difficult one for both Maddi and Helen, with Maddi crying strongly in protest and Helen becoming flushed and surreptitiously wiping away a tear. When Helen eventually handed Maddi over to Anna and left, Maddi cried very strongly, stretching in the direction of her mother walking away, and pulling away from Anna. Two minutes later, Maddi was much calmer and started taking an interest in the book that Anna was reading to her as she also rubbed Maddi's chest and cuddled her. But for the next 25 minutes or so, Maddi continued to break out in bouts of crying, even though in between these bouts she was able to take a brief interest in a number of different activities to which Anna carried her. During these activities, Maddi appeared to be quite accepting of comfort from Anna; but her calm times did not last, and Anna herself seemed to be feeling unsettled. Anna said to me after about 20 minutes of this behavior, "An hour will seem like an eternity to her mum too ... it's actually difficult when they [the children] don't speak" (CS2.fieldnotes, orientation visit 5/6, 09.54). I noted in my fieldnotes that this comment suggested to me that she too was finding this experience difficult.

A couple of minutes later, Sam walked over to Maddi and, opening her arms wide to her, said in an enthusiastic voice and with eyes open wide rather like the personification of King's (1978) infant teacher, "I think I might talk to Maddi; I like Maddi" (CS2.fieldnotes, orientation 5/6, 09.57). Maddi went to Sam straightaway and quieted down immediately. Sam kept up a steady stream of distracting talk, reading, and other activities with her. After morning tea, which Maddi spent on Sam's knees, Sam took many of the children to the indoor gym in a large hall for some gross motor play because the weather prohibited going outdoors, and this experience was the beginning of a complete transformation in Maddi's demeanor. Maddi was delighted to explore the balls and the trikes and had a great deal of fun with this equipment. Sam kept a constant eye on her and stayed very close to her, but Maddi was even happy responding to other children's approaches towards her. She smiled and laughed happily—a big change from her behavior before morning tea.

During the following session, Maddi retained the increased confidence she had shown on the previous visit; however, on this occasion, Helen did not leave the center for any of the time Maddi spent there, despite suggestions by both Anna and Sam that she could try leaving Maddi for a short period. Helen's ignoring of these suggestions caused some concern to Anna and Sam, and they both discussed their concern with me at the end of the session. In response, I wondered aloud whether Helen might appreciate being given a clear recommendation about when it was a good time for her to leave Maddi for a brief period. Both Sam and Anna were receptive to this suggestion and

decided that they would try this tack during the following visit, which was also to be Maddi's first day of sole attendance.

At the start of the next session, Anna told me that because Maddi had appeared to respond to Sam very positively during the last two sessions, she and Sam had decided that Sam would be the person who would look after Maddi when her mother left. For a center that did not have a formal policy on using a primary caregiver system, I felt this decision was significant; it was also in line with the view expressed by both Sam and Anna that "you've got to go with the child." As a result, Sam positioned herself close to Helen and Maddi from early on in the session, and 10 minutes later, she started to prepare Maddi for the leave-taking, saying that mum would have to go soon but that it was all right because Maddi was getting used to them both. After a delay when Sam was called to the phone, Sam initiated the leave-taking by approaching Maddi and talking to her gently, suggesting that Maddi join her in saying goodbye to mummy. Maddi pulled back towards her mother but, when Sam prompted Helen to "Just hand her to me" (CS2.fieldnotes, sole attendance week 1, 09.36), Helen did and walked away waving goodbye. This leave-taking was significantly brisker and had none of the vacillation of the fifth orientation session. Maddi responded to her mother's departure with loud and vigorous crying, but after about 5 minutes of crying interspersed with quiet moments, Maddi looked more relaxed and happy and spent the rest of the session mostly in Sam's arms, where she was intently interested in what was going on around her even if she did not actively participate.

Maddi's decided preference for Sam became unmistakable during the fieldwork visit of the following week when Anna made a number of interactive approaches to Maddi that Maddi withdrew from. By contrast, Maddi was much more responsive to Sam's approaches, so that at one stage, Anna said to me, "This is embarrassing" (CS2.fieldnotes, sole attendance 2, 09.33). For the rest of the case study, Maddi's relationship with Sam continued to strengthen, even through the short period when Maddi suddenly "took a shine" to a student teacher, Lisa, who was on placement at the center for a few weeks.

What Maddi Learned

In summary, it seemed that after an initial period of ambiguity about whom among the center adults Maddi would establish contact with, a *de facto* system of primary caregiving eventually emerged between Maddi and Sam that was initiated by Maddi and followed up on by the teachers. This practice was contrary to the center's policy of not having specific teachers assigned to specific children but was also in line with the teachers' articulated theory of practice that they would "go with the child" or take the lead from them. From then on, it was Sam who met Maddi first thing in the morning and only Sam who handled the leave-takings from Helen. In addition, it was from Sam's lap that Maddi observed the activities of the center and slowly ventured out to take an active part in them.

Discussion: Some Critical Polytextualist Reflections

The stories in this paper have traced some of the early contacts that three children in this study had with the new adults they met at their first child care center. The intention of this discussion was to provide an insight into the lived reality of this contact from the children's perspective. In constructing these narratives, I have been aware of the difficulties of gaining access to young children's experiences commented on by Stern (1985) and Stainton Rogers and Stainton Rogers (1992), among others. For example, Stern (1985) noted that "since we can never crawl inside an infant's mind, it may seem pointless to imagine what an infant might experience" (p. 4) and argued for the construction of hypotheses about children's experiences because of the human need to try and make sense of what is observed and because of the clinical application that the hypotheses might have. Stern (1985) argued also that adults' understandings of "the infant" are perforce constructions:

The observed infant is also a special construct, a description of capacities that can be observed directly.... As soon as we try to make inferences about the actual experiences of the real infant ... we are thrown back to our own subjective experience as the main source of inspiration.... Here, then, is the problem: the subjective life of the adult, as self-narrated, is the main source of inference about the infant's felt quality of social experience. A degree of circularity is unavoidable. (p. 17)

In a similar vein, Stainton Rogers and Stainton Rogers (1992) noted that observation only finds out:

what children are doing in a very limited and restricted sense—that which the observer, using a given understanding of children, *says* they are doing. What is revealed are not what children *are* doing, but the observer's accounting vocabularies and working hypotheses. (p. 18, italics in original)

Stainton Rogers and Stainton Rogers' (1992) response to the "elusiveness of the real" was to become "critical polytextualists" and shift the objective away from trying to discover the "real" and onto:

An endeavour which seeks merely to discover what we can learn from examining the different stories that are told about children.... For every story that knowledges children we need to ask either (or both): what is the function of the story (i.e. what can be done with it?); and/or, what ideology is the story peddling (i.e. what can be warranted by it?). (p. 18)

In this section, I adopt a critical polytextualist perspective and attempt to answer some of these questions by looking at the stories in this paper from a number of different theoretical perspectives: a social-constructionist perspective, an attachment theory perspective, and a temperament theory perspective.

A Social-Constructionist Perspective: Learning to Fit in

One of the most striking aspects of the stories in this paper was the way that the teachers' theories of practice, and the center's policy on helping children settle in, influenced the way that the children's interactions with the adults were experienced by each child. This insight lends itself easily to a social constructionist interpretation such as that offered by Valsiner (Valsiner, 1985; Valsiner & Hill, 1989).

According to Valsiner (Valsiner, 1985; Valsiner & Hill, 1989), children are socialized into culturally acceptable ways of acting in given situations through a process of *social canalization*. In Valsiner's framework, children's development of acting and of thinking is explained through the mutually related functioning of three zones. The first zone is called the "zone of freedom of movement" (ZFM) and refers to the structure of the environment that is functionally available to the developing child at a given time. The limits of this zone are negotiated with the caregivers and change as the child develops or moves into an area with a different physical structure. For example, the ZFM of a child may be the playpen or the front yard.

The second zone is the zone of promoted action (ZPA). This term refers to the set of objects and actions that the child's social environment actively promotes to the child to use and perform. The ZPA may be observed in the parents' and other people's preference structure of the child's different actions. This preference structure includes the actions and social expectancies that others promote as desirable for the child. As the child develops, he or she internalizes the social expectancies and gains knowledge about the acceptable and expected way of acting in a given situation. Once gained, this knowledge may be used in any way by the child. Valsiner and Hill (1989) give the example of an adolescent who in a social situation knows the rules of courtesy well but decides to not act appropriately and instead "cuts" another (p. 165). Valsiner (1985) calls the ZPA an important "selective canalizer of the child's actions" but also says that the structure of the ZPA can undergo dynamic transformation because it is negotiated in adult-child interaction.

The third zone is the well-known Vygotskian zone of proximal development (ZPD) and refers to the subset of ZPA actions that could be actualized with the help of other people. According to Valsiner (1985), the difficulty with this zone is that often one cannot know which actions actually constitute the ZPD because the existing structure of the ZFM and ZPA may restrict the opportunities of testing the limits of the ZPD. For instance, if the act of holding a fork is not within the ZPA or ZFM of a 16-month-old, it may not be possible to see if the 16-month-old child is physically capable of holding the fork. Thus, the ZPD-ZPA relationship is seen to determine what can or cannot be performed next by the child.

Using these understandings, it is possible to interpret what Nina learned about relating to Sarah as a product of the "focused treatment" that Sarah espoused

in her theory of practice. In line with her principle of "developing a deep relationship" with Nina, Sarah initiated approaches to Nina, accepted those that Nina made, and did not discourage any of them. Sarah was also consistently tuned in to Nina's cues as to her focus of attention. She followed these cues, at times using them to introduce Nina to some of the center's rules and to build up an easy and comfortable relationship with her. One instance was at the painting easel, when, introducing the rule about wearing the apron for painting, she was also careful to not make this rule a cause of conflict. It can be argued that through this focused treatment, the action that was "promoted" to Nina was more direct contact with Sarah and that this treatment effectively "canalized" (Valsiner, 1985; Valsiner & Hill, 1989) Nina into the deep relationship with her that Sarah felt was required for a successful settling-in experience.

Similarly, in Julie's case, the center's policy that all teachers had responsibility for all children was enacted in the way that the teachers appeared to actively work to discourage Julie from forming lasting preferences for one teacher over another. In telling Julie's story, I suggested that both the direct action of the teachers in deflecting her from following Maria around the center and the accompanying "backstage stream of talk" (Pontecorvo, 1998) worked to promote to Julie the center's preferred ways of interacting with the adults. This behavior too had the effect of "social canalization" (Valsiner, 1985; Valsiner & Hill, 1989); like Nina, Julie gained knowledge about the acceptable ways of acting in the context of her center and, over time, fell into line with the adults' expectations.

The story I have told about Maddi's experience of settling in is somewhat different but also similar. In Maddi's center, there were no clear procedures on how the settling-in process was to be handled apart from the principle of "going with the child." This lack of clear procedures meant that Anna's electing to be the teacher participant in the study put her in an unusual position in relation to the center's normal practice of letting things unfold in their own time. The norm in the center was for all the adults to have equal responsibility for all children, with no one child receiving particular attention from any specific teacher. In Maddi's case, what unfolded was a decided preference, over time, to be with Sam, creating what I have called a *de facto* system of primary caregiving that Sam had not sought but which both Anna and Sam supported once they recognized Maddi's preference. The teachers justified their action in terms of respecting the child's right to choose. However, the type of contact that occurred between Maddi and the two teachers differed and suggests that this difference may have contributed to Maddi's choice to be with Sam. Thus, analysis suggests the following conclusions:

- The approach of "wait and see what the child wants" that operated in Maddi's center resulted in less clear canalization by the adults early on in the process about what the teachers expected in terms of interaction between themselves and the child. For Maddi, this practice resulted in a somewhat slow and "bumpy" start to establishing relations with the center adults and ambiguity about what generally was expected of her at

the center.

- The more engaged interaction that Maddi eventually had with Sam may have "canalized" her into seeing Sam as the more responsive teacher and led to her developing her preference for Sam.

In this way, Maddi's story also may be read as a story of social canalization: the teachers expected her to show them her preference for which of the teachers she wanted to spend time with, and, despite a slow and "bumpy" start, Maddi eventually did.

These stories indicate that a connection existed between the children's experience of their interactions with the center adults and the way that the adults understood their role during the settling-in process. The social constructionist perspective used by Valsiner (1985) and Pontecorvo (1998) would suggest that the children's relations to the adults can be seen as a co-construction between the adults and the children, with the children being seen as having contributed to the process as well as the adults. In the stories told above, the children's contribution was most evident in the choice that Maddi made between the two teachers who actively approached her as possible partners in interaction. In Nina's case, Nina's acceptance of Sarah's attempts to become her primary caregiver can also be seen as an active choice highlighted by her refusal to go to anyone else when she fell asleep on Sarah's arm. The adults' contributions were to set expectations based on policy or their theories of practice. To a large extent, the children found themselves "learning to fit in" with these expectations.

An Attachment Theory Perspective: To Have or Not to Have a Primary Caregiver

In the three stories above, the two themes of the children's separation from their mothers and of forming new relationships—or attachments—with the center adults were constant undertones (or overtones) in the discourse of the adults involved in the study, including my own discourse in my fieldnotes as researcher.

Looked at from an attachment theory perspective, the stories of how the children formed, or attempted to form, relationships with their preferred adult can be read as the children's attempt to develop an attachment relationship with a new adult that would fill the gap left by their mother's absence. There were many elements of the three children's stories that could be used to support such an analysis. For example, all the children swiftly worked out when their mother was not at the center with them. This awareness was evident in Nina's "searching" behavior, noted by Sarah and me, and in Julie's crying when Maria walked in the front door—behavior that Patti interpreted as indicating that Julie was reminded of her mother. Likewise, the meaning for the child of the mother's absence was clearly an unhappy one: it was difficult to interpret the children's crying at the mother's departure as anything but an expression of this unhappiness and of protest at the event. Additionally, for the child, there was a "sense of loss" from which the center

adults tried to shift the child's attention through using a range of distracting techniques. The construction of the settling-in event as one of separation was clearly evident in Jean's description of the settling-in experience as one of "com[ing] to terms with separation" (CS1.PIS1.2.2). In Sarah's talk about a new child's needing to develop a "deep relationship," there was a clear expression of the idea that the relationship with the teacher was a substitute attachment relationship from which the child drew security.

Finally, it is also possible to read the behavior of Nina with Sarah and of Maddi with Sam, after both children attended on their own, as being strikingly similar in nature. In both cases, the children had a few sessions when they spent most of their time in close proximity to "their" teacher before they eventually started to move away and take part in activities on their own initiative. In the case of Maddi, her behavior with Sam was also very similar to her behavior when she was with her mother, Helen. In the absence of her primary attachment figure, Maddi appeared to use Sam as her substitute security base, and this relationship enabled her to move beyond the state of watchfulness and observation to the beginnings of involvement in the center curriculum. The teachers saw such involvement as signifying that a child was settled.

So, using a critical polytextualist stance, what is the function of this interpretation? What can be done with it in terms of enhancing practice in early childhood settings?

Most obviously, the answer to these questions is that an attachment theory perspective on these stories would find an argument in favor of having a primary caregiver system in place. From this perspective, Nina's story is a clear example of how the primary caregiver system worked to ensure that all of Nina's needs for security were met during the time of starting child care. Maddi's case could be used to argue that having a primary caregiver system in place on a regular basis would avoid the ambiguities that occurred about the best person to guide Maddi and her mother through the settling-in process. Additionally, Maddi's need to actively seek out which of the teachers she preferred to be with would have been obviated. Julie's case, on the other hand, could be used to argue that in the absence of a primary caregiver with sole responsibility for a particular child, the child's needs for security might be ignored, possibly leading to insecure attachments with the center adults. Thus, from an attachment theory perspective, the different "social practices" used in settling in the three children in these stories would be seen to "*matter*" (Stainton Rogers & Stainton Rogers, 1992, p. 14) in terms of making the primary caregiver system a more credible system than the other two options for the enhancement of the child's feeling of security.

A Temperament Theory Perspective on Relating to the Adults

Looked at from the perspective of studies that have explored the connection between children's temperament classification and children's response to starting child care, the stories of Nina, Julie, and Maddi also have potential

bearing on the issue of whether or not to have a primary caregiver. For instance, in a study of adjustment to nursery school, Marcus, Chess, and Thomas (1972) found that "easy" children adapted without difficulty regardless of the routines used in the nursery school, "difficult" children did better in more structured and friendly environments rather than in "laissez-faire" ones, and the "slow-to-warm" children did best when they were allowed to adapt at their own slow pace. Other work (e.g., Center for Child and Family Studies, 1993) has suggested that slow-to-warm children need constant attention and a style of handling that involves a recurring cycle of adult behavior described as "being with, taking to, remaining available and moving away."

The angle that temperament theory would take on the stories above would be that because both Nina and Julie appeared to have temperaments that would be likely to be classified as "easy," it would be reasonable to hypothesize that they would have settled in quickly in any type of child care environment. On the other hand, with Maddi and her mother, who were both described as quite "reserved," a temperament theory perspective would hypothesize that in their case, a more guided and focused system for settling them in would have been more likely to have been experienced positively. It seems reasonable, therefore, to suggest that from this perspective, the primary caregiver system would also be seen as a social practice that was credible as a way of approaching the experience of starting child care, because a center policy that assigns responsibility for settling in a new child to a specific teacher is more likely to enable constant monitoring of how a child responds to the new situation. In turn, one would expect that this practice would result in more accurate tuning in to the process of "being with, taking to, remaining invisible and moving away" that slow-to-warm children find helpful (Center for Child and Family Studies, 1993).

Conclusion

One of the intentions of the overall study from which this paper has drawn its data was that it should illuminate how the process of starting child care might be enhanced at the level of practice in early childhood settings. The data presented in this paper are only a small part of the picture that emerged in the overall study; my intention here has been to present stories of how three children learned to relate to the adults in their new child care center rather than recommend ways to enhance practice. Through these stories, I have sought to illuminate the lived reality of the experience of starting child care from the children's perspective.

Nonetheless, in the context of seeking ways to enhance practice, at least one major implication emerges from these data. It is clear in these stories of how children learned to relate to the center adults that what the teachers did, in terms of relating to the new children, had an impact on the kind of relationships that developed between the teachers and the new children. In other words, what teachers did, as well as what teachers did not do, made a difference. At the very least, this finding suggests that teachers need to be

self-conscious about how their center policies and theories of practice influence children's learning.

Furthermore, teachers posing the polytextualist questions of "what can be done with these stories? what can be warranted by them?" may be interested in the suggestion from the data in this paper that a system of primary caregivers has much to offer in enhancing the nature of the very young child's experiences of relating to adults.

Notes

1. In the notation system used throughout the paper, the case study number (1-5) appears first, then the research instrument is named from among the following:

- Interviews

- Parent interview schedule 1 (PIS1)
 - Parent interview schedule 2 (PIS2)
 - Teacher interview schedule 1 (TIS1)
 - Teacher interview schedule 2 (TIS2)

- Parent/Teacher Journal

- Parent journal (PJ)
 - Teacher journal (TJ)

- The Researcher

- Fieldnotes
 - Video records

For the interviews, the page number and question number follow (e.g., CS2.TIS1.3.2c means case study 2, teacher interview schedule 1, page 3, question 2c). For the journals, the page number and line references follow (e.g., CS1.TJ.2.23-24 means case study 1, teacher journal, page 2, lines 23 and 24). For the fieldnotes, the term "fieldnotes" is followed by type of visit the child had (e.g., orientation 3/8 means third orientation visit out of 8; sole attendance 1/6 means the first attendance out of 6 attended by the child without a home adult). The time of the fieldnotes observation is indicated at the start of the data segment (e.g., 09.27 mean 09.27 hours).

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Early Childhood Educators and the FIS Grant Program: An Interview with Naomi Karp

Naomi Karp is the Director of the National Institute on Early Childhood Development and Education (ECL) in the Office of Educational Research and Improvement (OERI) in the U.S. Department of Education <http://www.ed.gov/>. ECRP Associate Editor Dianne Rothenberg recently spoke with her regarding funding for early childhood education research through OERI's Field-Initiated Studies Grant Program.

What is the FIS grant program?

The Field-Initiated Studies or FIS grant program is a national competition to support research applications that come from practitioners and researchers, public policy makers, and other groups around the country reflecting their sense of what is most important and constructive to study. In other words, FIS grant applicants can choose their own topics for study along established lines of inquiry, or they can choose new topics that will build new theories, or they can test and apply new research methodologies that perhaps will solve enduring problems in the field of early childhood development and learning.

Grant applications for this program can be a maximum of 20 pages of narrative, plus appendices of the applicants' choosing. The grant period is a maximum of 36 months—basically, we ask people to describe the problem area they are going to address, tell us how they would solve this problem, and let us know what types of resources would be needed to solve it. In last year's competition, the grant awards ranged from about \$270,000 (for an 18-month

study) to about \$1,740,000 (for a 36-month study). Since 1996, the Early Childhood Institute has funded 22 FIS grant applications.

Who is eligible to apply?

We have received grant applications from diverse applicants, including universities, education associations, private research organizations, pediatric hospitals, Head Start and child care entities, and public schools. We encourage partnerships and collaboration across disciplines in applications, which I think is particularly important if we are to address the needs of the whole child. The participation of many disciplines is necessary to serve the whole child. Especially for first-time applicants and community-based organizations that have programs that need study, it's helpful if they partner with universities in their communities to develop their grant applications.

As head of the Early Childhood Institute, what are you hoping to see the grant applications funded through this program accomplish?

It's important to be able to answer the "so what" question: So what difference will this work make in the lives of children and families? One of the best ways we can do that is to translate research findings so that families, policy makers, and the early childhood workforce can apply these findings to everyday situations in order to improve young children's learning and development.

In the FY2000 grants that were recently funded, what characteristics were typical of the strongest proposals?

They have usually addressed a current problem, one that has a long history in early childhood education. Often it's a problem that, if solved, would make a difference in the lives of many young children—in other words, the results could be generalizable. Funded applications have also typically had a strong literature review, a clearly defined population and control group, and a strong methodology (often with a blend of quantitative and qualitative research) for assessing the effects of an intervention or program.

One of our roles in this office is helping to be a translator of research findings. We try to get the word out about what improves young children's learning and development. We work with our grantees to develop new ways to disseminate their research findings. Perhaps one day we will have "a strong dissemination plan" as one of the criteria reviewers use to evaluate FIS applications.

What were some of the problems typical of weaker proposals?

Applicants sometimes forget to pay attention to details. They take for granted that reviewers will know a lot about their specific areas and fail to put in needed definitions or background information. Sometimes they forget to define samples and how samples will be recruited and retained. Sometimes they don't include control groups, or address what training will look like, or take sufficient care that the budget matches the scope of work. With a 20-page

limit, it's important to write succinctly and to organize the application well, and that's hard to do!

When will you be accepting more applications for another round of FIS funding?

The next competition should be in 2001, although no dates have been set yet. *ECRP* readers might want to check the Department's funding page under FIS at <http://www.ed.gov/offices/OERI/FIS/> occasionally to make sure they don't miss the next set of deadlines.

What would you most like the early childhood community to know about this grant program?

We desperately need well-qualified reviewers, and we desperately need high-quality, relevant research grant applications. **If you are interested in becoming a reviewer, please send a complete resume to me, at The Early Childhood Institute, 555 New Jersey Avenue, NW – Room 606d, Washington, DC 20208. We will enter your resume into our database.**

What do you mean by relevant?

We need research projects that address the challenges that early childhood educators, administrators, and families are grappling with every day around young children's learning and development. Since we try to base our work on the "three Rs" of early childhood education—Relationships, Resilience, and Readiness—we would like to see applications that address the issues related to these areas. We do know that the research says that we have to address the whole child, so we need grant applications that look at the cognitive, social-emotional, and physical domains of child development. We would like research applications that address the recommendations and challenges found in two important studies: *Preventing Reading Difficulties in Young Children* and *Eager to Learn: Educating Our Preschoolers*. Our Institute played a key role in funding these reports from the National Research Council, and they contain critical questions that need to be answered.

Applicants also should know that this grant program is highly competitive. We get a lot of grant applications for a relatively small number of awards, but we hope potential applicants won't be discouraged. We believe that most of our research is making a difference at the grass roots level. We are providing answers to questions that early childhood educators ask.

Where are the exact details about the program located?

You can find the description of the FIS program at this Web address: <http://www.ed.gov/offices/OERI/FIS/>



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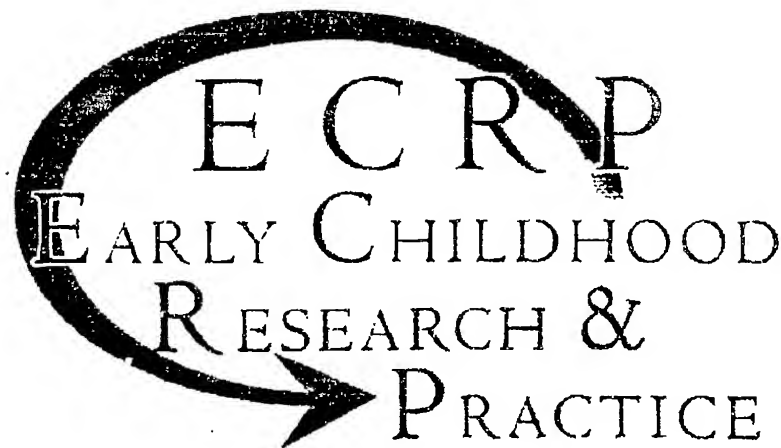
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Volume 2, Number 2

The Hairy Head Project

Barbara Gallick

Illinois State University Child Care Center

Abstract

A class of 3- to 6-year-old children in a midwestern child care center chose to study hair and hairstyling salons as a group project. This article discusses how the project evolved, describes the three phases of the project, and provides the teacher's reflections on the project. Photos taken during the project are included.

School and Student Background Information

Illinois State University (ISU) Child Care Center serves 2- through 6-year-old children of ISU students in a full-day setting. One classroom serves 2-year-old children, and one is a mixed-age classroom that serves 3- through 6-year-old children. The Project Approach is used as the basis of curriculum in both classrooms. We began using the Project Approach in the mixed-age classroom in 1996.

The mixed-age classroom enrollment is 20 to 25 children each semester. There are three head teachers who team-teach in the mixed-age classroom, along with teacher aides who are college students.

The Hairy Head Project was conducted in the mixed-age classroom. The majority of children attended for the full day, 5 days a week. Many of the children had attended the child care center for more than 1 year. Most of the children in this class had been involved in project work either the previous semester or the previous year. Fourteen girls and nine boys were enrolled at the time of this project. At the beginning of the project (in February), we had ten 3-year-old children, eleven 4-year-old children, and two 5-year-old children. By the time the project finished (in May), we had celebrated a number of birthdays, so we had six 3-year-old children, eleven 4-year-old children, and six 5-year-old children. The youngest child at the beginning of the project was 3 years 3 months. The oldest child at the beginning of the project was 5 years 6 months.

Preliminary Planning and Selection of the Topic

The teachers chose to do a project on hair and hair salons based on a spontaneous discussion that developed one Monday morning. Many children had received hair cuts over the weekend. During Morning Meeting (a time when the children and teachers discuss the current project and share information about project work), the children began to discuss their haircutting experiences. A majority of the class took part in the discussion, remembering their own personal haircutting experiences, siblings' experiences, or parents' experiences. This particular discussion alerted the teachers to a potential project topic.

The teachers began their own discussion about beginning a project related to hair and hair salons. We had noticed that the children regularly requested the hairstyling dramatic play kit that was available in our classroom. We felt that the children had an interest in hairstyling. The teachers were confident that the hair salons they frequented would be open to having young children visit to do fieldwork. They also felt that this topic was well within the realm of all the children's experiences.



Morgan (4.7 years), Kathy (4.9 years), Marta (3.8 years), and Susan (4.8 years) played with the

hairdresser dramatic play kit. The class interest in using this kit motivated our decision to begin a project on hair and hair salons.

Phase 1

Phase 1 sometimes includes discussions of experiences, sharing knowledge and wondering out loud, raising questions, and preparing letters to parents.

Activities

Every morning, after all the children have arrived, we all gather for Morning Meeting. The following Morning Meeting activities took place during Phase 1 of the Hairy Head Project:

- The teachers and children shared their personal haircutting experiences (most of these conversations were taped and transcribed as part of our ongoing documentation).
- Through the various discussions, we were able to formulate questions that would be answered in Phase 2. The teachers began writing down the questions.
- The teachers wrote down the children's ideas about the topic in the form of a web.
- Plans were made for some beginning activities related to hair and haircutting.

Haircuts and hair salons became the topic of a number of interesting discussions held during Morning Meetings. The teachers encouraged the children to talk about their personal haircutting experiences. Many of the children described the waiting areas of the hair salons where they got haircuts. The teachers encouraged the children to describe where they sat during the haircut, what the cutting stations looked like, and what happened when their haircut was finished. By listening to the children, the teachers began to understand the types of knowledge the children had regarding hair and hair salons, as well as areas where there were gaps in knowledge or misinformation.

We found that the children were very observant with regard to the waiting area and the cutting stations. Most of the children did not understand that people paid for their haircuts. The majority of the children talked about getting a lollipop and then leaving once their haircut was finished.

The following is an example of a discussion that helped us formulate questions to investigate in Phase 2:

Laura (4.11 years): When my brother was getting his haircut at the mall, they put blue water on my brother and gray water on my hair.

Peggy (3.5 years): They put red water on my hair.

John (3.11 years): Why do they do that?

Peggy: They just put red water on my hair so they can cut it.

Mary (3.9 years): They used white water at my place.

Barb (teacher): Maybe we should ask someone who cuts hair why they use colored water. We could invite someone who cuts hair to our school and ask them questions.

Once the children became focused on hair and haircutting, we began to develop activities that might encourage continued discussion and sharing of personal experiences. Some of the children used magazine photos to make a hairstyle collage. A small group of children graphed the results of the survey question: "What color is your hair?"

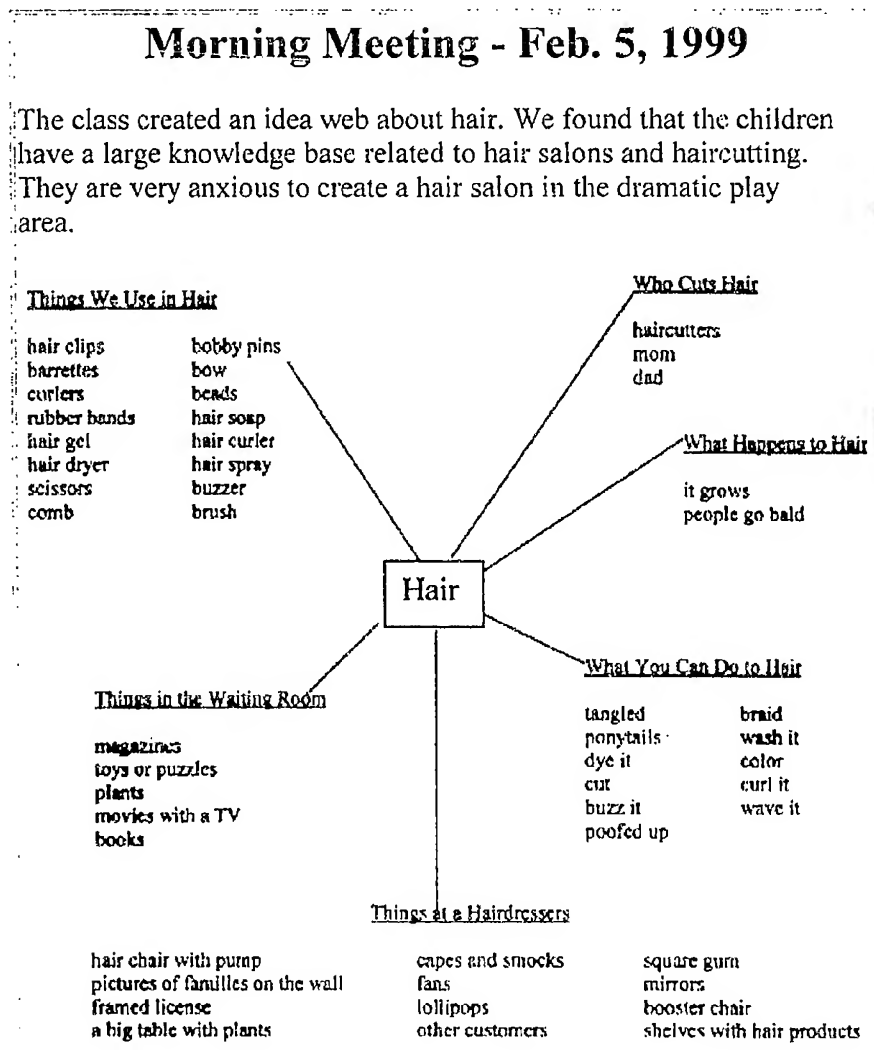


Peggy (3.5 years), Anne (3.11 years), and Hilary (4.7 years) worked with Barb (teacher) to set up the "What Color Is Your Hair?" graph. Anne is copy writing "red."



Nancy (4.7 years) is asking John (3.11 years) about his "true" hair color.

After about a week of good discussions related to hair and hair salons, we created an idea web with the children. The children told us what they knew about haircutting and hair salons. The teachers wrote down the children's ideas in the form of a web, helping the children see ways to group similar ideas:



As we created the idea web, it became clear that the children knew a lot about what hair salons looked like inside. Possibly as a result of creating an idea web, which helped organize the children's thoughts and ideas, the children decided they would like to turn the dramatic play area into a hair salon.

For about 3 days, Morning Meeting discussions centered on what we would need to do to create a hair salon in our dramatic play area. We asked the children to dictate a list that would guide our efforts in creating a hair salon. The children were glad to let us write down their ideas:

What We Need to Have a Hair Salon

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Add scissors (pretend)	Hair spray	Sink
Clean up—brooms	Towels	Brushes and combs
Make hair dryers	Shampoo bottles	Drawers
Seats—chairs	Mirror	Toys
Make a gumball machine	Lollipops	Mailbox
Curlers	Smocks and capes	Take out the gloves
Shelf	Old powder boxes	Booster seat
Magazines and books	Checkbook	Take out the food stuff
Refrigerator/Freezer		
A pump to push the chairs up and down		
Paper things you put around your neck		

After the list was created, the teachers asked the children how they would be able to get all the items they listed. The children decided that they could make pretend lollipops with materials we already had at the child care center. One child commented that she had an empty shampoo bottle at home. As the children talked, they began to realize that their families could serve as resources and advisors.

Another child suggested writing a letter to parents and friends asking for items for the hair salon. A small group of children volunteered to write the letter.



Nancy (4.6 years) and Laura (4.11 years) made notes about the parent letter they were helping write.

Another small group worked on making play lollipops for the hair salon. The children created lollipops using empty film containers, Popsicle sticks, masking tape, and tissue paper. They also made lollipops using juice can lids wrapped in tissue paper with Popsicle sticks taped to the lid. One child drew a picture of lollipops for the front of a clear plastic storage container that would become the lollipop jar.



Mary (3.9 years) is focused on creating a lollipop.



David (3.7 years) is trying to attach the stick to the film canister.

Once the children began bringing items from home, a group of children worked on rearranging furniture and making a hair bowl for the hair washing station. The "What We Need to Have a Hair Salon" list became a guide or plan that was followed when a small group of children and one of the teachers began rearranging furniture. As the furniture was moved around, the children and teacher often referred to the list to make sure we included space for everything.



A group of children review the "What We Need to Have a Hair Salon" chart as they make decisions about moving furniture in the dramatic play area.

The following are snippets of the conversation that took place in the process of rearranging and designing the hair salon:

William (4.10 years): But we need a paying room. Should we have the keys for the person who owns the place? Should they have the keys to get in here?

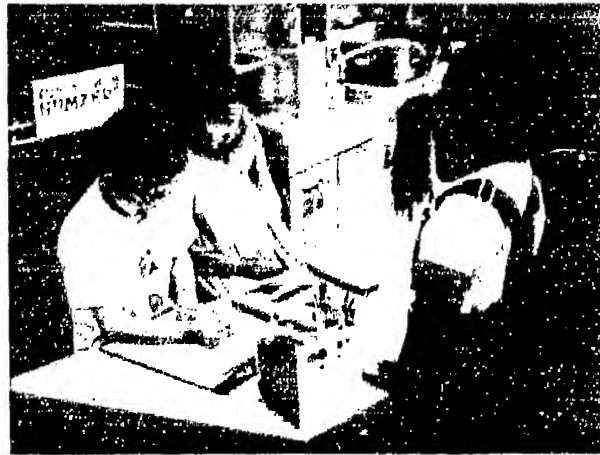
Colin (5.6 years): In case the door's locked, so no one can get in to steal stuff.

Colin: We need a bathroom because sometimes when you're getting your hair done, you need to go to the bathroom, and they have their own.

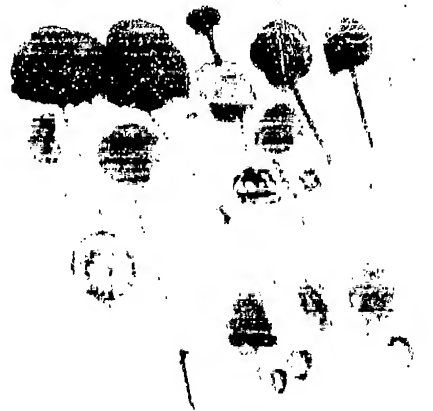
William: And a sink because we don't want the germs.

As more items accumulated, the children decided to make labels for the shelves and containers in an effort to organize their hair salon. We received an amazing variety of items. It became clear that individual families were able to reflect their ethnicity and personal experiences through their donations. One African American family donated a number of hair magazines that showed a variety of hairstyles for African American men, women, and children.

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Anne (4.2 years) waited for an appointment at the hair salon. William (5.1 years) helped Anne, while Morgan (4.11 years) answered the phone.



This is the sketch of lollipops you can see on the front of the lollipop jar that is sitting on the reception desk in the hair salon.

By the time the hair salon began to take shape, the children realized that you have to pay for your haircuts. One girl and her father made checks on their home computer for the children to use when paying for their hair services. We found some old checkbook covers and old wallets for the children to use for their checks.

Reflections on Phase 1

At first, our Morning Meeting discussions related to haircutting were short and not very rich. It took a couple of days before the children really began to

share information. The teachers made an effort to focus on the bits of information we were hearing. We began to formulate questions that would probe and prod the children to think more deeply about their experiences with haircuts. After a couple of days, the children began to stimulate each other. The children asked questions and encouraged others to tell about their experiences. We were glad that we had not given up after the first couple of discussions.

The children were very enthusiastic about redesigning the dramatic play area. They would have moved furniture the very first day if we had allowed them to do so. We took the opportunity to talk with the children about formulating plans and making lists. As described earlier, we discussed all the ideas the children were sharing and suggested writing their ideas down before we actually started moving furniture. As we helped the children organize their thoughts by creating the "What We Need to Have a Hair Salon" list, the children began to realize how useful this list could be. When the time came to move the furniture, the children made sure we had the list on a clipboard. They checked off the items as they were accomplished.

The group who wrote the parent letter also referred to the list. Taking the time to create lists and plans proved to be a very valuable experience for the group. When we began planning the culminating activity, the children created lists and an overall plan with ease. Encouraging the children to slow down a bit also provided the opportunity for us to include parents.

Phase 2

Phase 2 sometimes includes conducting fieldwork, discussing activities that are taking place in small groups, investigating questions that were formulated in Phase 1, visiting experts, representing information children learned during their investigations, and creating displays to share their new knowledge.

Activities

Chris, one of our teacher aides, informed us that his mother was a hairstylist who ran her own shop in a small town near the university. Chris invited his mother to be a visiting expert. He also said that he was in need of a haircut, so the two of them decided to cut his hair at the child care center while the children watched.

The children dictated questions they would like to ask the hairstylist when she visited:

- Do you use a buzzer?
- Do you use scissors?
- How much does it cost?
- Do you use any combs in Chris's hair?
- Do you use special brushes?
- Do you braid hair?

Do you give kids treats if they sit still?
How do you give a permanent?
Do you spray colored water on people's hair?
Do you use hair gel?
Do you use hair dryers?
Do you use curlers on hair?
Do you use curling irons?
Do you use grease?

On the day of the visit, Tina, the hairstylist, allowed the children to help her use the clippers on her son's hair.



Nancy (4.7 years) took a turn to use the clippers on Chris's hair.

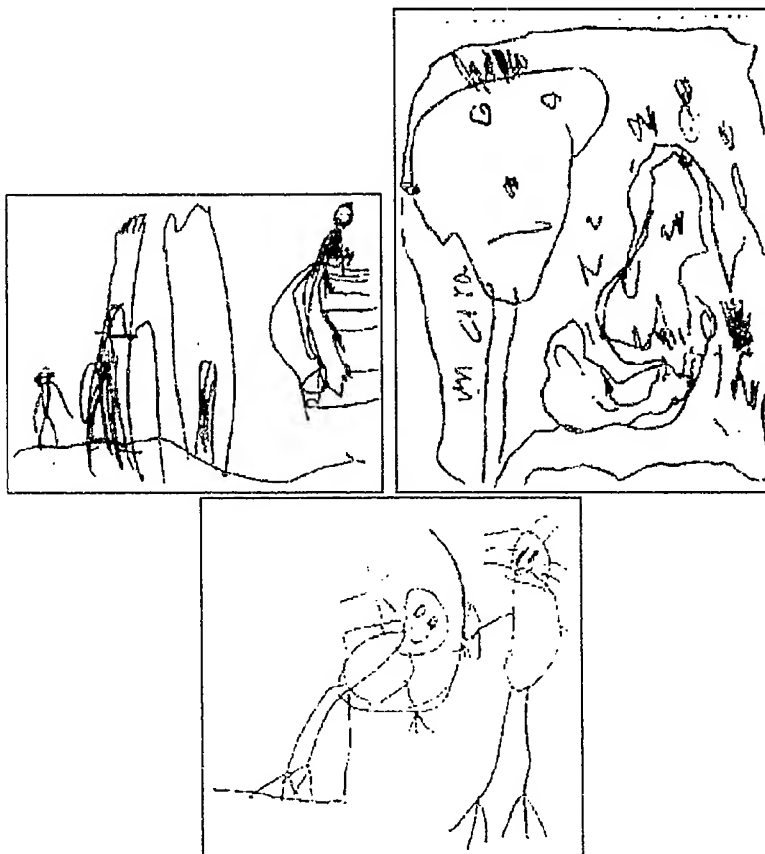


Tina helped James (4.7 years) clip a section of hair.

She answered the children's questions and shared other information. She brought along some antique curling irons (the kind that were heated in a fire) and hair clippers. The children found these items very interesting. Tina did answer the question about colored water that had come up earlier in the project. She told the children that hairstylists just use regular water to wet hair

for cutting, but they use a variety of colored bottles to hold the water!

The children made sketches of Tina while she cut Chris's hair:



Sketches of Tina cutting Chris's hair.

After the visit, the children dictated their memories of the visit and drew pictures that we included in a thank-you card to Tina.

The dramatic play hair salon continued to be a popular spot. The children realized that cleaning up the hair salon was not easy. Everyone put items in different places, and some children were becoming upset when they tried to play in the area and could not find what they were looking for.

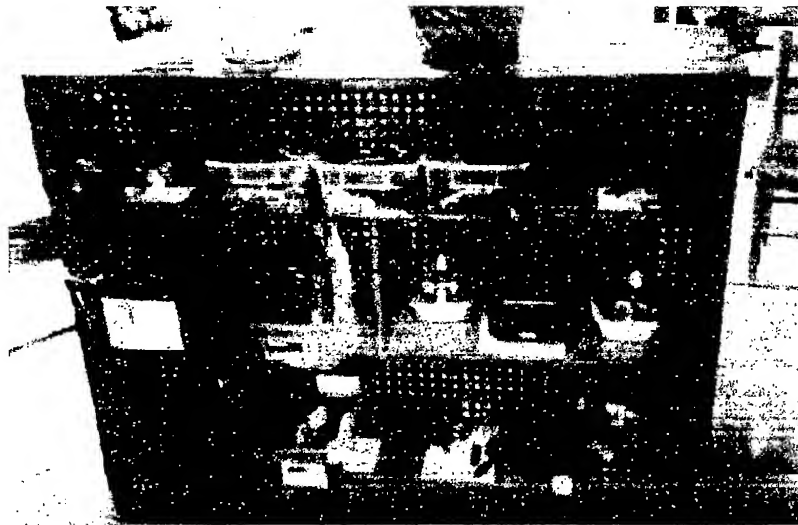
A small group of children worked with a teacher to organize items using small plastic bins. The children drew pictures of the items in each bin and copied labels on the pictures. We color photocopied the signs and laminated them. We mounted a sign on each bin and a matching sign on the shelf where the bin should be placed.



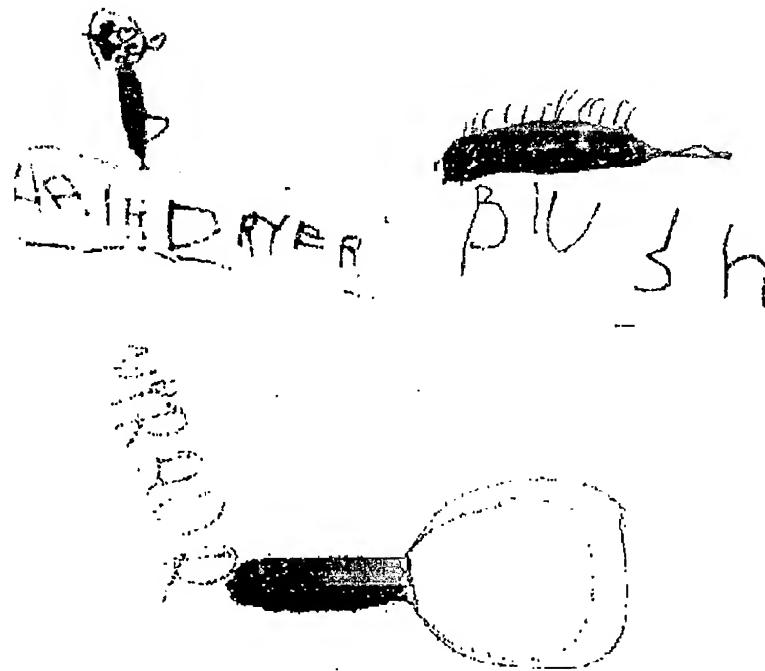
Laura (4.11 years) drew a label for the curler sets. These labels were placed on the shelf where the curler sets should be stored.



Mary (3.9 years) took a break from her drawing of the curling iron to see how William (4.10 years) and Laura (4.11 years) were doing. William was drawing the hair spray bottle, and Laura was drawing the hair dryer.



The children organized the hair salon bins and shelves with labels. We taped curlers and barrettes to the front of the storage bin for those items.



Sketches used to organize the hair salon shelf.

The preschool teacher at the lab school on our campus loaned us some mannequin heads for the hair salon. The children spent many hours styling the hair on the mannequins.



*Marie (4.6 years) and Kathy (4.9 years) put
barrettes on one of the mannequins.*

One of our parents, a physics professor, brought in a Van de Graff generator. He explained how hair is affected by electricity. When the generator is turned on, a mild electric current flows causing hair to stand on end. The children (if interested) were able to sit on a little stool and place their hands on the large metal ball of the generator. This experience was an interesting digression from our hair salon discussions.

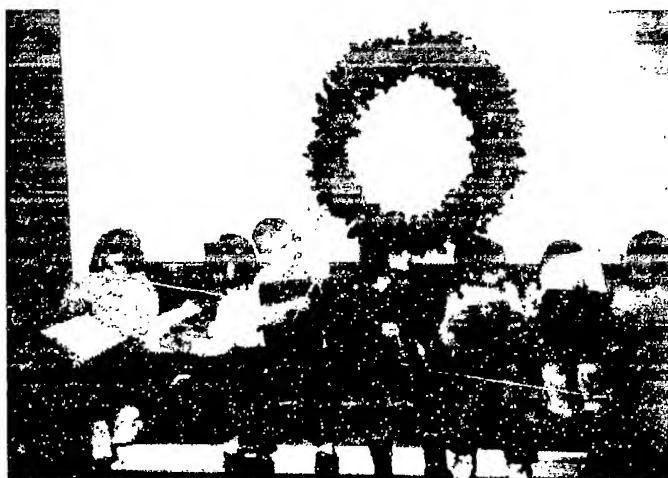
The teachers proposed the idea of forming small groups that would study different aspects of hair salons. The children immediately began suggesting topics for study. We wrote down their ideas and began to see some common interests. The children divided into five different interest groups for fieldwork. The children divided pretty evenly between the five groups. The groups were the Mirror Group, the Scissors Group, the Bathroom Group, the Cost Group, and the Old Tools Group. (It is important to note that the children were interested in bathrooms in hair salons from early in the project. The fact that hair salons needed to have bathrooms was pointed out in an early discussion. A number of children brought this topic up regularly, so the teachers were not surprised when the idea came up to form a group to study bathrooms.)

The teachers set up visits to two different hair salons in our community. At a parent meeting, one of the parents told us that a local restaurant had an antique barber chair and an old-fashioned permanent wave machine in its lobby/waiting area. We called the restaurant and set up a visit for the Old Tools Group.

Prior to visiting field sites, each group met a number of times. The children created a plan and formulated questions to ask at each site. Each of the three head teachers supervised a specific group for the remainder of project. Usually, a head teacher met with two different groups each day. The groups reported their progress and plans to the whole class at Morning Meeting the following day.

During the actual fieldwork, we took representatives from each group to each site. The children asked questions, made sketches, and gathered other information. These representatives reported back to their group on their findings. Each child at the center visited one site—Fox and Hounds Hair Studio, Creative Cuts, or Henry Wellington's Restaurant. The teachers took pictures at each site.

Fieldwork at Fox and Hounds Hair Studio



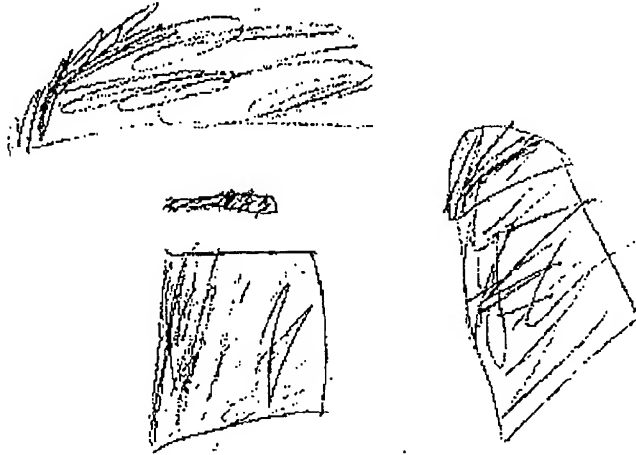
The children found a bench to sit on while making field sketches at Fox and Hounds Hair Studio.



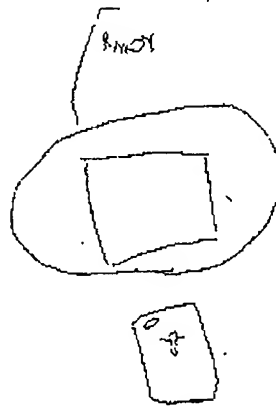
Anne (4 years), Marie (4.7 years), and Sherry (3.11 years) used the hair dryer chairs while making sketches of mirrors at Fox and Hounds Hair Studio.



This cutting station is at Fox and Hounds Hair Studio. We had to do research to learn that the shape of the mirror at this station is called Palladian

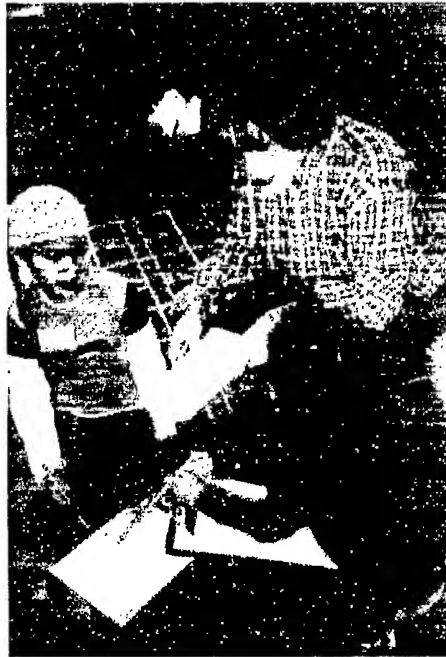


These mirror sketches were made at Fox and Hounds Hair Studio.



Laura (5 years): The circular drawing is a table in the front of Fox and Hounds Hair Studio. The square drawing is where the people sit when they get their hair cut.

Fieldwork at Creative Cuts



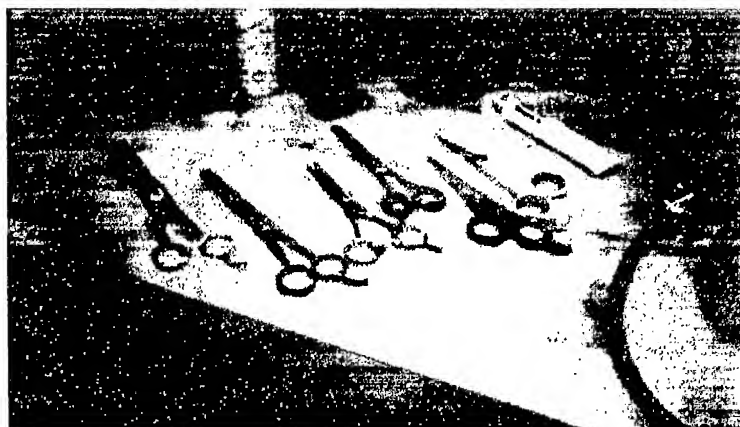
Morgan (4.10 years) and Nancy (4.8 years) talked to Jennifer (teacher) about the list of questions they were trying to get answered.



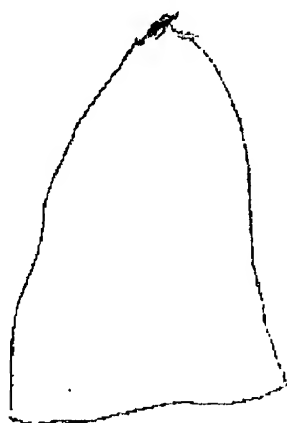
Barb (teacher) wrote down information for Mary (3.10 years) and Morgan (4.8 years). Morgan's clipboard is full of numbers he had written. He wrote down all the costs for services at Creative Cuts as Barb read them from the sign in the shop.



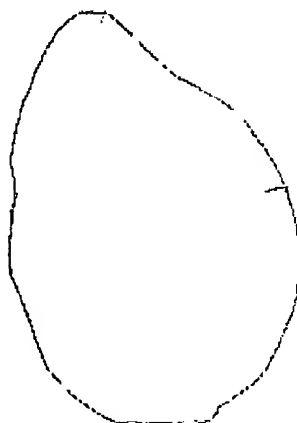
Ian (4.1 years) made sketches of the people waiting to get their hair cut.



When the children asked her questions about scissors, one of the hairstylists laid out all the different scissors she used.

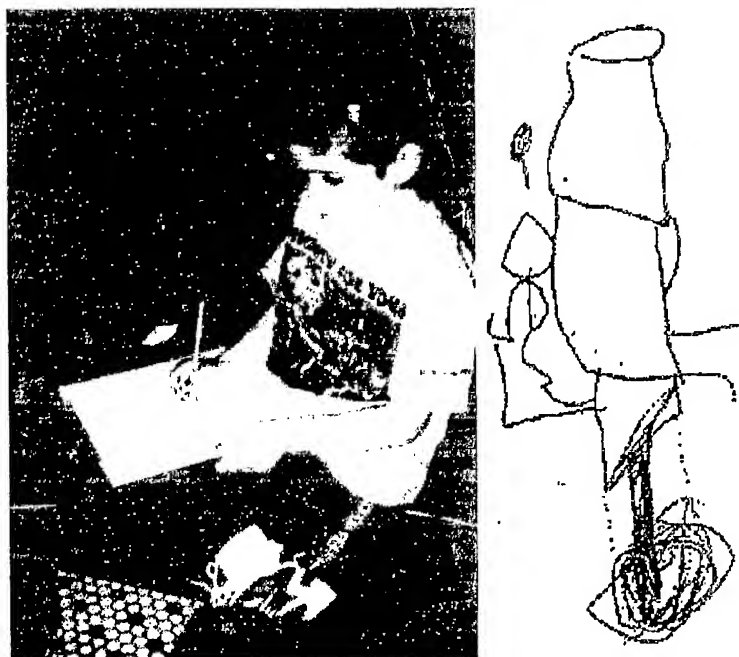


Morgan E. (4.8 years): An oval mirror in the bathroom.



Jeff (4.8 years): Oval mirror in the bathroom at Creative Cuts.

Fieldwork at Henry Wellington's Restaurant



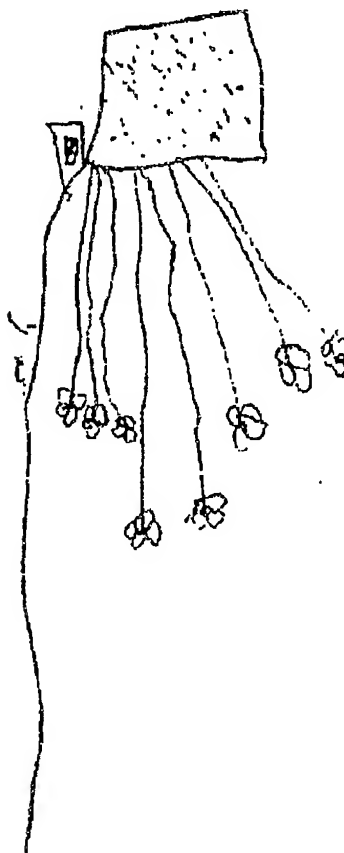
Colin (5.7 years) made a sketch of the old-fashioned barber chair.



While David (3.8 years) tried out the barber chair, John (3.11 years) and Kathy (4.10 years) looked at the permanent wave machine.



Kathy (4.10 years) made a sketch of the permanent wave machine.



Kathy (4.10 years) drew flowers on the end of the permanent wave machine wires instead of clips.



Colin (5.7 years) also drew the permanent wave machine.

After site visits, the children dictated and decorated thank-you notes to the people at each site. Each group then began to make plans for representing their new knowledge and for sharing this knowledge with classmates and parents.

The Bathroom Group decided to create a bathroom in a large crate in the hair salon in the dramatic play area. The children built a toilet, sink, and shower. They also decorated the walls with artwork. The artwork decorations were based on the murals in the bathroom at the first hair salon we visited.



James (4.11 years), Anne (4.1 years), and Hilary (4.8 years) were working on turning a chair into a toilet. They used a box for the tank. They also cut apart another box to form the toilet seat. They

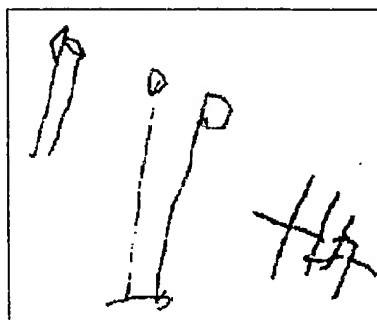
added a handle using a piece of wood.

An interesting interaction took place between two children during the bathroom wall decorating. James, who usually chose physical activity over artwork, noticed and commented on the butterflies that Hilary was drawing. Hilary was very involved in drawing, quite often by herself, and did not spend a lot of time playing with groups of children. Hilary graciously accepted James's compliment about her butterflies. James then asked if Hilary could teach him how to draw butterflies. Hilary willingly took on the task, and the two children spent some high-quality time working together. This peer interaction might never have occurred if not for project work in our classroom!

The Scissors Group wrote and illustrated a book about all the types of scissors used in hair salons. The children dictated the text. After Lisa (a teacher) had typed up their text and printed out the pages, the children drew the illustrations. The children used real scissors and their fieldwork sketches as models. The book was added to the classroom library shelf.



Ian (4.1 years) drew an illustration on a page of the scissors book.



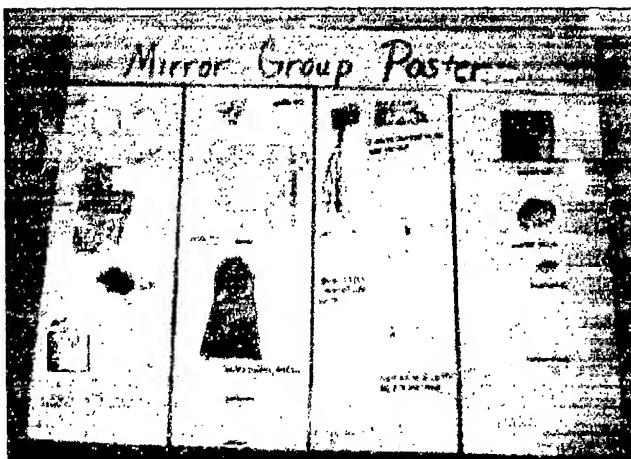
This is the page that Ian was working on in the photo

The Mirror Group created a chart about mirrors. The children divided the

chart into categories: sizes of mirrors, shapes of mirrors, purpose of mirrors in hair salons, and locations of mirrors in hair salons. The children used aluminum foil wrapped around paper shapes to represent the different sized and shaped mirrors.



Peggy (3.6 years), Nancy (4.8 years), and Marie (4.7 years) glued the mirrors they made onto the Mirror Chart. Pam (teacher) and Mary (3.11 years) supervised the Mirror Group's work.



The Mirror Chart was designed and constructed by the children in the Mirror Group. The chart shows shapes of mirrors, locations of mirrors, purposes for mirrors, and sizes of mirrors in hair salons. As you can see, the children used aluminum foil to represent some of the mirrors. They drew and cut out the mirrors while the teacher helped write the descriptions.

The Old Tools Group constructed a permanent wave machine similar to the one they viewed at Henry Wellington's Restaurant.



John (4.1 years) was attaching hair clips to the top of the permanent wave machine.

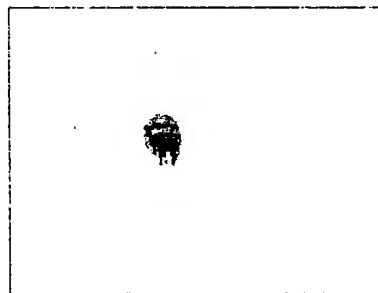


The Old Tools Group posed with their finished permanent wave machine.

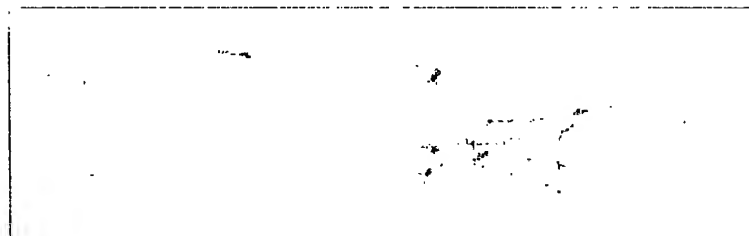
The children at the center were able to explore the antique hair tools that Tina shared earlier in the semester when Chris brought the tools back. Many children (not just the Old Tools Group) made sketches of these hair tools.



Mary (3.11 years) sketched the antique hair clippers.



This is the sketch Mary was working on in the above photo.



Marie (4.8 years) sketched the antique curling iron.

The Cost Group made two charts showing prices for services at both hair salons we visited. These charts were used as guides to set the prices for the various services offered in our child care hair salon. The class voted on prices for our hair salon at Morning Meeting. We put up a chart, and the children helped write in the services and the prices.



Morgan (4.9 years), Mary (3.11 years), and William (4.11 years) worked with Pam (teacher) to make a chart showing the prices for services at Creative Cuts Hair Salon.



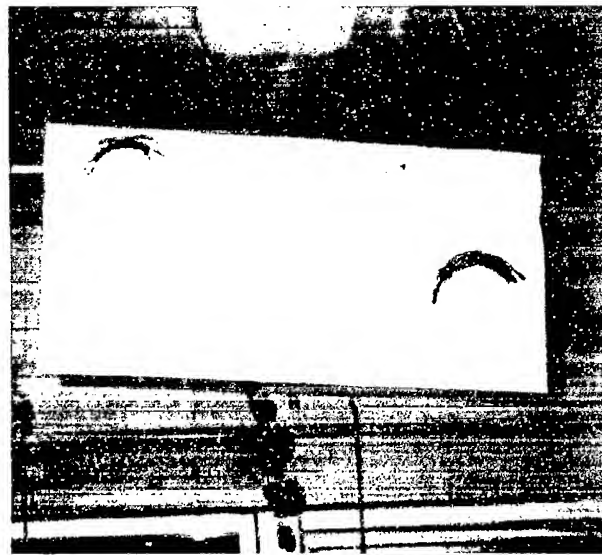
Marie (4.8 years) took a turn to write in a price on our hair salon price chart.

Once all the groups had completed their representational work, the class decided to name our hair salon. After much discussion, the class voted on the following names:

The Hairy Head
Pretty Pretty Hair Salon
Bows, Braids, and Buzzers
The Shaggy Hair

Pretty Chick
The Haircut Station
The Pretty Shave

The class decided to call our hair salon "The Hairy Head." A group of children created a sign that was hung over the entry to the dramatic play area.



The children created this Hairy Head sign for the dramatic play area.

Reflections on Phase 2

The visit of the expert, Tina, really helped the project take shape. The children were very enthusiastic about learning more after Tina's visit. She provided hands-on experience, answered their questions respectfully, and provided new information that sparked a desire in some of the children to learn more.

When we began to explore the idea of dividing into groups for investigation and fieldwork, the teachers were surprised at how easily the children decided on topics of interest. Only a few children had a hard time choosing the one topic they found most interesting. The majority of the children were able to immediately suggest a topic or choose a topic already suggested by a friend. There were a few children who made their choices based on a friend's choice, but generally, we felt each child chose a group based on a personal interest.

Our hair salon field experiences were very different at each location. The teachers learned quite a bit from these diverse visits. At the first hair salon, the owner gave the children a guided tour of the facility. This salon was quite large and included a nail section and a massage facility. The teachers helped the children ask their questions at appropriate times during the tour. We did take some time to make sketches and get other questions answered after the tour, but the children were beginning to tire and lose focus by the time we were able to make sketches.

At the second hair salon we visited (a much smaller salon), the owner and other stylists greeted the children and continued their work. We were allowed to explore the salon at our own pace. The children were able to begin making sketches almost immediately. When the representatives of each investigative group were ready, the teachers were able to help them ask their questions. All the employees made themselves available, so we were able to direct our questions to the stylist who was free at the time.

We felt the visit to the second salon was much more successful in terms of the children's attention span and focus. The sketches made at the second salon were much more detailed.

The teachers will use these experiences to guide our planning and preparation when setting up field experiences for future projects. We will spend a little time talking with the field site representatives explaining what we would like to accomplish during our visit.

Phase 3

Phase 3 sometimes includes a culminating event, collaborative evaluation, further activities related to the topic, discussions around planning a culminating event, discussions about future projects, setting up displays for parents and other pertinent people to view, and soliciting comments from parents.

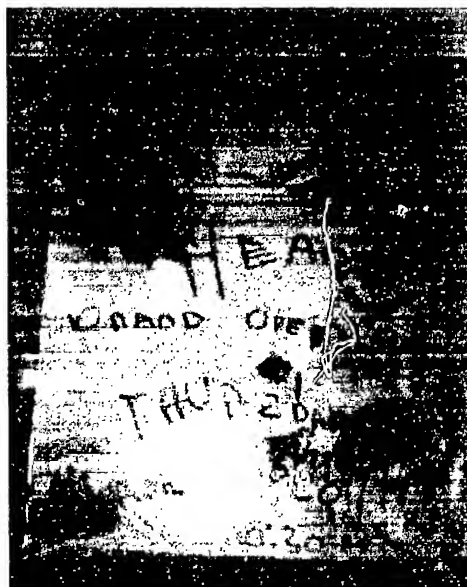
The teachers and the children discussed ways we could share our project with our parents and others on our campus. We decided to hold a grand opening celebration for the Hairy Head Salon. The children divided into four committees to help plan the grand opening: decorations, door prizes, refreshments, and invitations.

The decorations committee chose a rainbow theme for streamers, balloons, and table decorations.

On the day of the event, they helped decorate. This committee also helped decorate signs announcing the upcoming grand opening. We hung the signs in the hallway outside the child care center and on the child care center door.



Laura (5.1 years) and David (3.9 years) decorated a sign announcing the Hairy Head grand opening.



The finished grand opening sign.

The door prize committee made a list of possible prizes. The children created tickets for guests to fill out and decorated boxes for the door prize tickets. The children on this committee also decorated a sign to hang on the front of the door prize registration table. The sign read: "Sign up for Door Prizes."



Diane (3.10 years) painted the word "up" on the door prize registration sign.



Laura (5.1 years), Peggy (3.7 years), and William (5 years) worked on the door prize registration table sign.

The invitations committee wrote and illustrated an invitation that was sent to parents, the staff of the hair salons we visited, and to friends of the child care center around our university campus. They also wrote a note to the chair of our college department inviting her to cut the grand opening ribbon.



The invitations committee wrote and illustrated invitations.

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Jeff (4.9 years) helped deliver invitations to all children's cubbies in our classroom. We also sent invitations through campus mail to people around the university who help the child care center in various ways.

The refreshments committee decided to serve sugar cookies decorated as hairy heads, lemonade, and Hawaiian Punch. We used refrigerated sugar cookie dough to make the cookies. Once the cookies were baked, the entire class helped decorate the cookies. As you can see in the photos, the cookies were a highlight of the grand opening!



Luke (3.5 years) added blonde hair to one of the cookies he was decorating.



*The children did a fantastic job
decorating all the "hairy heads."
They look good enough to eat!*

We made a list of the jobs that would need to be done the day of the grand opening. The children each volunteered for a specific job. The jobs included acting as greeters at the door who passed out brochures explaining our project, workers at a name tag table (the name tags were heads designed by the children), workers at the door prize entry table, refreshment servers, tour guides in the hair salon, and workers who drew names and passed out the door prizes.

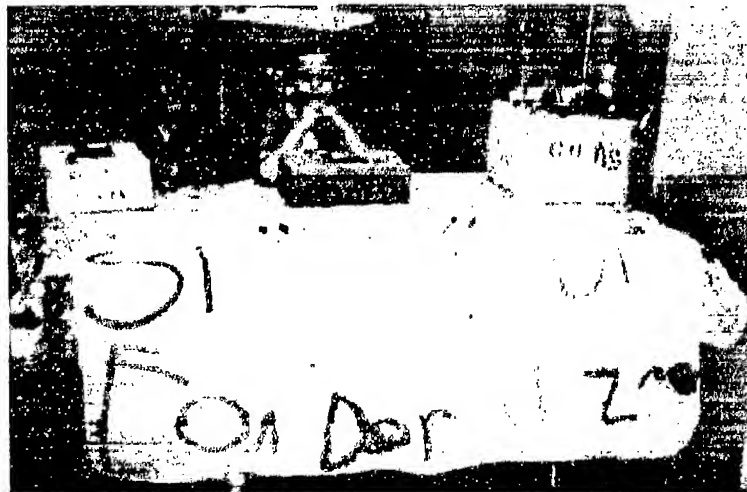


*Ian (4.2 years), Marie (4.8 years), and
Anne (4.2 years) greeted our guests with*

cheerful smiles (although they did say they got tired of standing!). They handed out brochures explaining our project. The children helped dictate the text of the brochure.



Kathy (4.11 years), Diane (3.10 years), David (3.9 years), and William (5 years) were ready to give tours of the Hairy Head Salon.



Jeff (4.9 years) and Colin (5.8 years) encouraged visitors to sign up for door prizes.



Peggy (3.7 years), Laura (5.1 years), and Nancy (4.9 years) waited anxiously to help serve our guests refreshments.



Hilary (4.9 years), Mary (3.11 years), and Morgan (4.9 years) posed in front of the door prize table. Their job was to draw names and award door prizes to our visitors and to the children.

[Click here to view the brochure of the Hairy Head Salon.](#)

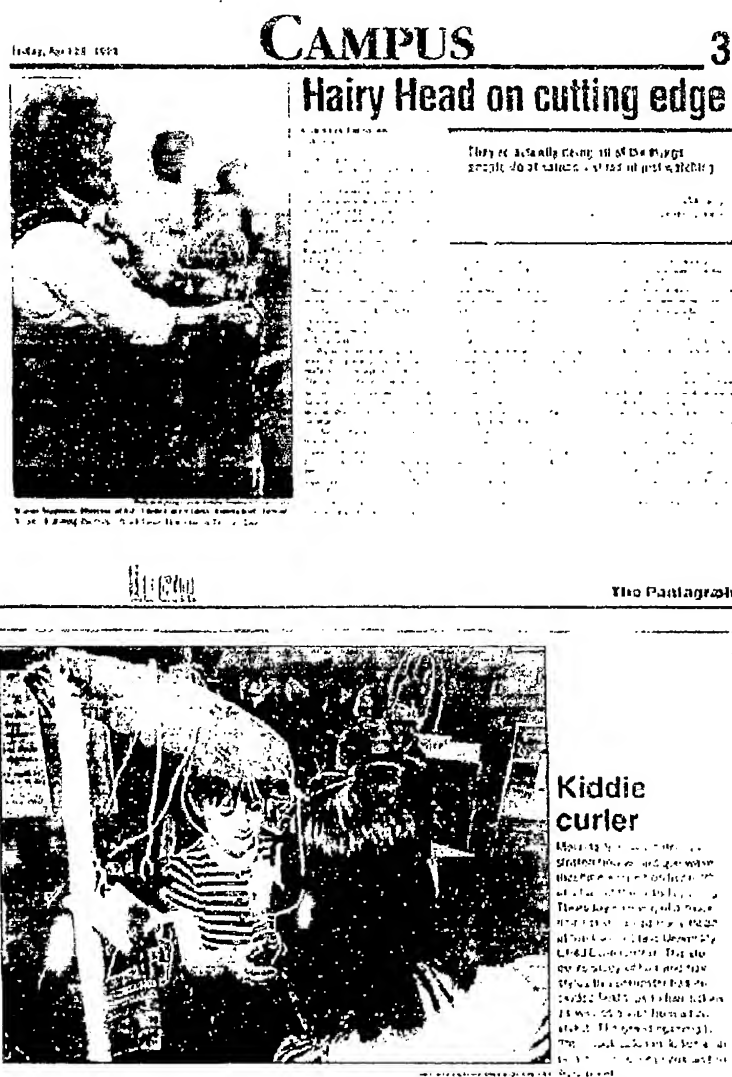
We borrowed a pair of giant scissors from the Chamber of Commerce, and the chair of the Family and Consumer Science Department came to cut the ribbon. She gave a short speech acknowledging all the work the children had

done and praising their efforts. The grand opening of the Hairy Head Salon proved to be a great success. The children were quite pleased with their efforts to share their work with their parents and friends:

"We loved the grand opening!" William (5 years)

"It was fantastic!" Morgan (4.9 years)

After the grand opening, we received a few cards congratulating the children on their work. The local newspaper and the campus newspaper published articles with photos of the event.



The children continued to play in the Hairy Head Salon until the end of the semester.

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*A view of the Hairy Head Salon from the entrance to the dramatic play area.
The large crate behind the mirrors is the bathroom.*

Reflections on Phase 3

The children and teachers all felt such a sense of accomplishment at the end of this project that the grand opening was a true celebration. We had a lot of fun planning the event with the children. They had become so adept at working together in small groups that the committees ran very smoothly. The grand opening took shape in a very short time.

Often, setting up and actually surviving a big event in an educational program is stressful for the adults and the children because the normal flow and routine are interrupted. Amazingly, the children and the teachers survived our grand opening and were left with a sense of satisfaction. We were able to continue the rest of our day with no adverse effects on teachers' patience levels or the children's behavior. Project work is so powerful!

Conclusion

The teachers were very pleased with this project. The children learned a lot about working in groups and sharing ideas. We felt the fieldwork was very productive because of all the pre-planning that the teachers and children did. The children were able to apply the knowledge they gained during fieldwork in a variety of ways. Each group chose to share their information using different methods and different media. The project provided many opportunities for children to use a variety of skills and helped reinforce basic skills and concepts. This project left a lasting impression on the children, teachers, and parents. The project was an experience that helped the children develop some good learning dispositions.

The teachers finished this project feeling they had gained a better understanding of project work and how to support projects in their classroom.

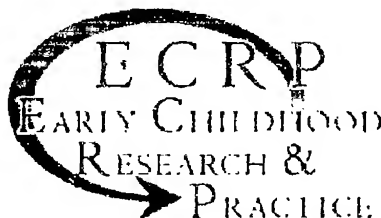
We developed some very good team planning skills. We all agreed that this was one of our most successful projects.

One parent even asked if we were going to create a business the next semester!

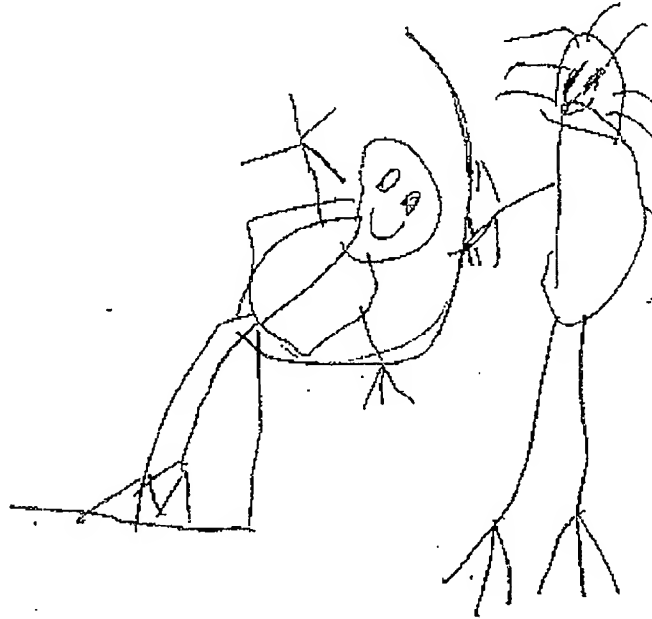
Author Information

Barb Gallick is a head teacher at Illinois State University Child Care Center. She co-teaches with two other head teachers in the mixed-age classroom serving children ages 3–6 years. Barb has a B.S. in Elementary Education with a minor in Early Childhood Education and a M.S. in Curriculum and Instruction with an emphasis in Early Childhood Education. Barb continues to learn about the Project Approach and the Reggio Emilia Approach. She has been a member of the organizing team that coordinates the Illinois Project Support Group.

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THE HAIRY HEAD SALON



ISU CHILD CARE CENTER

FEBRUARY - MAY 1999

The Hairy Head Project

Phase One:

One morning in February, a number of children came in with new haircuts. This prompted a very involved discussion about hair, hair cutting and hair salons. Thus, a project was born. During Phase One, we had a number of interesting discussions about hair cutting and hair salons. The children conducted a hair color survey, drew faces and hair on a bulletin board display and graphed the number of hair salons we found listed in the yellow pages.



Chris, one of our teacher's aides, arranged to have his mother come to the center to cut his hair. Tina, a hair stylist by trade, let each of the children help use the clippers on Chris' hair. She brought along a number of hair styling items to talk about. She also brought along two antique curling irons and an antique hair clipper.

The children changed the dramatic play area into a hair salon. They used their prior knowledge of hair salons to guide their design and room arrangement.

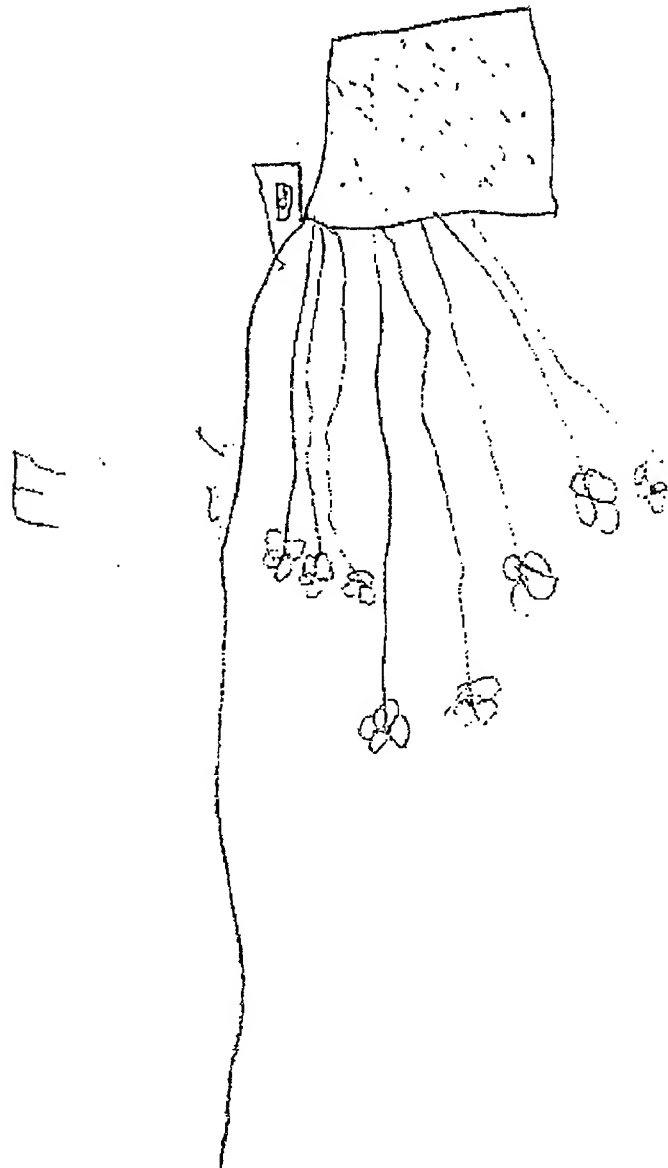
Phase Two:

The teachers arranged visits to Fox and Hounds Hair Studio and Creative Cuts hair salon. The children divided into the following investigation groups: Bathroom group, Scissors group, Cost group, and the Mirror group. One group of children decided to investigate Old Tools. We set up a visit to Henry Wellington's restaurant to see an old barber chair and an old permanent wave machine.

After our fieldwork, each group represented the information they learned. The Bathroom group built a bathroom in our child care hair salon. The Mirror group made a poster. The Scissors group wrote a book about scissors. The Cost group made signs showing prices from both hair salons we visited. We used these signs as guides to create a price chart for our dramatic play hair salon. The Old Tools group built a replica permanent wave machine.

Phase Three:

The children chose a name for our hair salon: The Hairy Head. They decided to have a grand opening to culminate our project and share all our work with family and friends. We formed committees for decorations, door prizes, refreshments, and invitations. The Grand Opening for the Hairy Head was held on Thursday, April 29, 1999.



Sketch of
permanent
wave
machine at
Henry
Wellington's
Restaurant
done by
Kathy (4.10
yr.)

A special thank you to the following
businesses for donating door prizes.

AB Hatchery
Creative Cuts
Earthkeepers
First Edition Hair Salon
Fox and Hounds Hair Studio
Garlic Press
Holiday Inn in Normal

Nestle
Radisson Hotel in Bloomington
Solid Gold Jewelers
Toys R Us
YMCA

Click [here](#) to return to The Hairy Head Project

Early Childhood
Research & Practice
Vol. 2 No. 2: Fall 2000

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Science Education and
Young Children: Recent
Citations from the ERIC
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New at ERIC ECE



Volume 2, Number 2

Science Education and Young Children: Recent Citations from the ERIC Database

ERIC Documents

ED437165 PS027899

Title: Science and Math Explorations for Young Children: A
GEMS/PEACHES Handbook for Early Childhood Educators, Childcare
Providers, and Parents.

Author(s): Barrett, Katharine; Blinderman, Ellen; Boffen, Beatrice; Echols,
Jean; House, Patricia A.; Hosoume, Kimi; Kopp, Jaine

Author Affiliation: California Univ., Berkeley. Lawrence Hall of
Science.(BBB11310)

Pages: 81

Publication Date: 1999

Notes: With contributions from Carl Babcock and Lincoln Bergman.

Sponsoring Agency: National Science Foundation, Arlington, VA.

(BBB32538)@Hewlett-Packard Co. Foundation, Palo Alto, CA.

(BBB21736)@Fund for the Improvement of Postsecondary Education (ED),
Washington, DC. (EDD00024)

ISBN: 0-924886-30-7

Available from: Document Not Available from EDRS.

Availability: Great Explorations in Math and Science (GEMS), Lawrence
Hall of Science #5200, University of California, Berkeley, CA 94720-5200
(\$15). Tel: 510-642-7771; Fax: 510-643-0309.

Document Type: Book (010); Guides—Non-classroom (055)

Geographic Source: U.S.: California

Journal Announcement: RIEJUN2000

This handbook is designed to help readers understand the educational philosophy and practice of the PEACHES (Primary Explorations for Children and Educators in Science) and GEMS (Great Explorations in Math and Science) programs, and to assist in using GEMS/PEACHES teachers' guides in schools and child care centers. The handbook outlines techniques and strategies for use with young students and describes how the activities emphasize a developmental approach. On a larger level, the handbook is intended as a useful summary of current ideas in early childhood education that may help in evaluating curriculum materials and sparking new ideas. The goal is to help children build from what they already know in order to construct new knowledge and ideas. The handbook focuses on early childhood and is based on five of the eight K-4 content standards from the "National Science Education Standards." The handbook discusses how to put into effective practice the inquiry-based approach called for in these standards as well as the curriculum standards of the National Council of Teachers of Mathematics. The handbook's introductory materials are: (1) "What Is LHS (Lawrence Hall of Science)?" (2) "What Is GEMS?" (3) "What Is PEACHES?" and (4) "Introduction." Chapters are: (1) "Science for Everyone"; (2) "Science and Math Explorations with Children"; (3) "The Role of Teachers and Parents"; (4) "Children's Play and Creativity"; (5) "Language Development"; (6) "Equity and Excellence in Early Childhood Education"; (7) "Mathematics in Early Childhood"; (8) "Timely Questions"; (9) "Active Assessment"; (10) "To Build a Bridge"; and (11) "A Look at the New Millennium." End materials include national science and mathematics standards charts, national science and mathematics standards criteria, and resources related to using questions as a teaching technique. (Contains 54 references). (EV)

Descriptors: Developmentally Appropriate Practices; *Early Childhood Education; *Hands On Science; Mathematics; Mathematics Activities; Mathematics Curriculum; *Mathematics Instruction; Science Activities; Science Curriculum; *Science Instruction; Science Process Skills; Science Programs; Sciences

Identifiers: *Great Explorations in Math and Science; National Science Education Standards

ED436256 PS028092

Title: **Research on Early Science Education.**

Author(s): Landry, Christopher E.; Forman, George E.

Pages: 27

Publication Date: 1999

Notes: In: The Early Childhood Curriculum: Current Findings in Theory and Practice. Third Edition; see PS 028 086.

Available from: EDRS Price MF01 Plus Postage. PC Not Available from EDRS.

Document Type: Information Analysis (070)

Geographic Source: U.S.; New York

Journal Announcement: RIEMAY2000

The implementation of basic research on children's scientific thinking into science curricula continues to be a slow process. This chapter summarizes research on cognitive development that has helped to establish the goals for

much of early science education and examines its implications. The chapter begins by describing scientific thinking and linking it to a model: (1) understanding the need for explanation, influenced by developmental constraints; (2) understanding that observable data are essential to substantiate claims and are linked to intuitive theories and previous experience; and (3) understanding that explanations need to meet logical criteria and are influenced by teacher practices. The chapter examines research on children's development of an understanding of mental states and activities and application of this understanding to science thinking and discusses research on children's ideas about science. Finally, the chapter considers the teacher's role and examines the types of intervention suggested from various lines of research, including using conversation, documenting children's thinking, using drawing to learn scientific concepts, and incorporating collaborative problem solving. The chapter concludes by noting that the model of science thinking helps to develop a constructivism that accounts for the interchange among children, their peers, and their teacher and that recognizes developmental constraints and the importance of children's intuitive understanding. This perspective leads to a social constructionism that is child-centered while acknowledging the teacher's role in bridging the discovery process and socially constructed symbol systems. (Contains 58 references.) (KB)

Descriptors: Cognitive Development; Concept Formation; Constructivism (Learning); Early Childhood Education; Educational Practices; *Kindergarten; Kindergarten Children; Models; Preschool Children; *Preschool Curriculum; Preschool Education; *Science Education; Scientific Concepts; Teaching Methods
Identifiers: Theory of Mind

ED418777 PS026273

Title: Science in Early Childhood: Developing and Acquiring Fundamental Concepts and Skills.

Author(s): Lind, Karen K.

Pages: 18

Publication Date: February 1998

Notes: Paper presented at the Forum on Early Childhood Science, Mathematics, and Technology Education (Washington, DC, February 6-8, 1998).

Sponsoring Agency: National Science Foundation, Washington, DC. (FGK57295)

Available from: EDRS Price MF01/PC01 Plus Postage.

Document Type: Opinion papers (120); Speeches/meeting papers (150)

Geographic Source: U.S.; Kentucky

Journal Announcement: RIESEP1998

Efforts to introduce children to essential experiences of science inquiry must begin at an early age. This paper describes the development of fundamental concepts and skills used from infancy through the primary years and presents strategies for helping students to acquire those fundamental concepts and skills needed for inquiry learning. The paper provides an overview of teaching and learning science in the early years, emphasizing the importance of selecting content that matches children's cognitive capacities.

During early childhood, children are acquiring fundamental concepts such as: one-to-one correspondence; counting; classifying; and measuring. They also develop processes to apply these concepts and to develop new ones. Children acquire fundamental concepts through active involvement with the environment. Science content can be introduced effectively into naturalistic, informal, or structured learning experiences. Several examples are given to illustrate the natural integration of fundamental concepts and process skills in mathematics and science. It is noted that the national reforms in science education and research support teaching science through inquiry. Several theories underlying early science instruction, including Piaget's and Vygotsky's theories of concept development, and a constructivist approach are explored. The paper notes the importance of considering the child's cognitive capacity when developing science instruction and maintains that when there is a mismatch, children are unable to extend, apply, or interpret deeper meanings of the content, and their interest and positive attitudes are likely to diminish. The paper concludes by noting that cognitive research has identified numerous misconceptions regarding scientific concepts in children and should be considered as barriers that educators need to overcome before approaching new concepts. Contains 24 references. (KB)

Descriptors: Child Development; Constructivism (Learning); *Early Childhood Education; Fundamental Concepts; Inquiry; Learning Processes; Piagetian Theory; Preschool Curriculum; Science Curriculum; *Science Education; *Science Instruction; Scientific Concepts; Skill Development; Teaching Methods; Young Children

Identifiers: National Science Education Standards; Vygotsky (Lev S)

ED416993 PS026271

Title: **Educating Young Children in Math, Science, and Technology.**

Author(s): Elkind, David

Pages: 16

Publication Date: February 1998

Notes: Paper presented at the Forum on Early Childhood Science, Mathematics, and Technology Education (Washington, DC, February 6-8, 1998).

Available from: EDRS Price MF01/PC01 Plus Postage.

Document Type: Guides—Non-classroom (055); Speeches/meeting papers (150)

Geographic Source: U.S.; Massachusetts

Journal Announcement: RIEJUL1998

This paper asserts that any intellectually responsible program to instruct young children in math, science, and technology must overcome at least three seemingly insurmountable obstacles: (1) adults' inability to discover, either by reflection or analysis, the means by which children acquire science and technology concepts; (2) the fact that young children think differently from adults and do not organize their world along the same lines as do older children and adults; and (3) the fact that young children have their own curriculum priorities and construct their own math, science, and technology concepts which while age appropriate, may appear wrong from an adult perspective. After considering each of these obstacles, the paper offers suggestions as to how they can be best overcome: (1) the importance of

observing young children's learning in order to make instructional decisions that truly reflect children's learning needs and processes; (2) the need to recognize the limits of instruction—for example, young children think transductively, and this limits the possibility of teaching abstract concepts; and (3) the value of employing capacity-linked and socially derived motivation, engaging the spontaneous learning motivation children experience as their cognitive capacity increases. Instilling social motivation by involving parents in ways that encourage their modeling of reading, question asking, and knowledge gathering are also crucial. (EV)

Descriptors: Abstract Reasoning; Concept Formation; *Early Childhood Education; Learning Motivation; Learning Processes; *Mathematics Education; Parent Role; *Science Education; Teaching Methods; Technology; Thinking Skills; Young Children

ED416992 PS026269

Title: **Preparing Teachers of Young Learners: Professional Development of Early Childhood Teachers in Mathematics and Science.**

Author(s): Copley, Juanita V.; Padron, Yolanda

Pages: 19

Publication Date: February 1998

Notes: Paper presented at the Forum on Early Childhood Science, Mathematics, and Technology Education (Washington, DC, February 6-8, 1998).

Available from: EDRS Price MF01/PC01 Plus Postage.

Document Type: Reports—Descriptive (141); Speeches/meeting papers (150)

Geographic Source: U.S.; Texas

Journal Announcement: RIEJUL1998

This paper focuses on the professional development of early childhood teachers in mathematics and science, examining the challenges posed by the increasing need for early childhood teachers, especially for children from culturally and linguistically different backgrounds. The paper discusses the current status of professional development for early childhood teachers and points out the variation in quantity and quality of field experiences for early childhood teachers and the limited focus on mathematics and science in professional development. The paper next presents standards for professional development of the early childhood teacher with reference to mathematics and science, synthesized from the National Science Education Standards, Professional Standards for Teaching Mathematics, and the Professional Standards for Early Education, to: (1) develop good dispositions toward mathematics and science; (2) experience good teaching in mathematics and science; (3) focus on learning about children and the mathematics and science content of specific interest to them; (4) participate in a variety of professional development opportunities situated in a learning community; (5) demonstrate an ability to implement integrative curriculum; and (6) utilize appropriate strategies to establish family partnerships. The paper then describes four professional development programs in Texas focusing on early childhood mathematics and science instruction, specifically trainer of trainer modules, study groups with math and science emphases, a graduate class for early childhood teachers on young children's reasoning and thinking and

appropriate math and science, and the Collaborative Coaching Project.
(Contains 12 references.) (KB)

Descriptors: Early Childhood Education; Higher Education; *Mathematics Instruction; *Professional Development; Program Descriptions; *Science Instruction; *Standards; *Teacher Education

Identifiers: National Science Education Standards; NCTM Professional Teaching Standards; Professional Standards for Early Education

ED424035 PS027022

Title: **A Curriculum Development Handbook for Early Childhood Educators.**

Author(s): Siraj-Blatchford, Iram, Ed.

Pages: 186

Publication Date: 1998

ISBN: 1-85856-100-0

Available from: Document Not Available from EDRS.

Availability: Trentham Books Limited, Westview House, 734 London Road, Oakhill, Stoke on Trent, Staffordshire ST4 5NP, England, United Kingdom; Tel: 0-1782- 745567, Tel: 0-1782-844699; Fax: 0-1782-745553; Web site: <http://www.trentham-books.co.uk>; e-mail: tb@trentham-books.co.uk (hardcover: ISBN-1-85856-100-6, 45 British Pounds Sterling; paperback: ISBN-1-85856-100-0, 14.95 British Pounds Sterling).

Document Type: Book (010); Guides—Non-classroom (055)

Geographic Source: United Kingdom; England

Journal Announcement: RIEMAR1999

Target Audience: Practitioners

This book is designed to be of interest to anyone working or intending to work with 3- to 6-year-old children. The book draws on the knowledge of staff involved in early childhood education courses at the Institute of Education, University of London, and other experts in early childhood education, integrating research and theory in various subject areas with practical experience in young children's learning and curriculum. The book emphasizes extending good practice in curriculum development and supporting and sustaining the positive practices that characterize many early childhood settings, asserting that curriculum cannot be seen in isolation and cannot exist without a strong and well-developed framework of support. Part I, "Quality," contains these chapters: (1) "Criteria for Determining Quality in Early Learning for 3-6 Year-Olds" (Siraj-Blatchford); and (2) "The Relationship between Planning and Assessment" (Fisher). Part II, "Core Learning Experiences," contains these chapters: (3) "Curiosity and Communication: Language and Literacy in the Early Years" (Riley); (4) "Doing Mathematics with Young Children" (Barber); (5) "Science in the Early Years" (Glauert); (6) "Physical Development in the Early Years" (Wetton); (7) "Design, Technology and the Use of Computers in the Early Years" (Siraj-Blatchford); and (8) "Humanities: Developing a Sense of Place and Time in the Early Years" (Heal and Cook). Part III, "Cross-Curricular Learning," contains these chapters: (9) "Fostering Creative Development" (Duffy); and (10) "Thinking about Me and Them: Personal and Social Development" (Roberts). Each chapter ends with notes on further

recommended reading and information for further development in the particular curriculum area and offers a comprehensive reference section to current readings. (EV)

Descriptors: Child Development; Computer Uses in Education; Creative Development; Curriculum Design; *Curriculum Development; *Early Childhood Education; Educational Quality; Foreign Countries; Language Acquisition; Literacy; Mathematics Education; Physical Development; Science Education; Social Development; Teaching Methods; Theory Practice Relationship

ED418791 PS026451

Title: **Creating Child-Centered Materials for Math and Science: 3-6 Year Olds. Step By Step: A Program for Children and Families.**

Author(s): Stolberg, Judith Rothschild; Daniels, Ellen R.

Author Affiliation: Children's Resources International, Inc., Washington, DC.(BBB34907); Open Society Inst., New York, NY.(BBB34908)

Pages: 209

Publication Date: 1998

Notes: For other publications in the series, see PS 026 447-450.

ISBN: 1-889544-10-8

Available from: EDRS Price MF01 Plus Postage. PC Not Available from EDRS.

Availability: Children's Resources International, Inc., 2262 Hall Place, N.W., Suite 205, Washington, DC 20007; phone: 800-625-2448; 202-625-2508; fax: 202-625- 2509; e-mail: CRIInc@aol.com (\$29.95, plus \$3.59 shipping and handling. DC residents must add 5.75% sales tax).

Document Type: Guides—Non-classroom (055)

Geographic Source: U.S.; New York

Journal Announcement: RIESEP1998

In child-centered education programs, children construct their own knowledge from their experiences and interactions with the world around them, and teachers foster children's growth and development by building on children's interests, needs, and strengths within a safe and caring environment. The Step by Step educational program developed a series of child-centered teaching manuals for caregivers and teachers in early childhood programs in Central and Eastern Europe. Initially directed at the preschool level for children ages 3 to 5, the series has been extended from birth to age 10. This manual focuses on creating child-centered activities for 3- to 6-year-old children. The manual provides 2-page descriptions of numerous math- and science-related activities in the following areas: (1) mathematics and manipulatives; (2) science; (3) sand and water; (4) dramatic play; (5) literacy; (6) art; (7) outdoor activities; (8) blocks; and (9) music. Contains 33 references. (EV)

Descriptors: Art Education; Dramatic Play; Early Childhood Education; Elementary School Students; Experiential Learning; *Learning Activities; Literacy; *Manipulative Materials; *Mathematics Education; Music Education; Outdoor Education; Preschool Children; *Science Education; Teaching Guides

Identifiers: Blocks; *Child Centered Education

ED415012 PS026072

Title: More than Magnets: Exploring the Wonders of Science in Preschool and Kindergarten.

Author(s): Moomaw, Sally; Hieronymus, Brenda

Pages: 308

Publication Date: October 1997

ISBN: 1-884834-33-7

Available from: Document Not Available from EDRS.

Availability: Redleaf Press, Division of Resources for Child Caring, MN 55104-4125 (\$24.95, plus shipping and handling).

Document Type: Book (010)

Geographic Source: U.S.; Ohio

Journal Announcement: RIEMAY1998

Science curricula typically do not capitalize on the hands-on, self-initiated learning style of young children. This book provides a comprehensive, developmentally appropriate approach to science education with young children, with special attention to physics and chemistry. The book's introductory chapter is followed by chapters on: (1) science displays; (2) machines and pendulums; (3) science in the sensory table; (4) art activities that incorporate science, music and science; (5) exploring science through cooking activities; and (6) science in the gross-motor arena. Each chapter begins with a section of answers to questions teachers and parents commonly ask. This question-and-answer section is followed by numerous activities that encourage children to explore materials, hypothesize, experiment, and make observations. Each activity is accompanied by a photograph and a description of how to set up the activity or construct the materials. Teachers will find a suggested sequence of implementation so they can start activities simply and build on the children's experiences. Each activity also contains a section called "what to look for" that guides teachers as they observe children interacting with the materials. Suggestions for questions to extend children's thinking accompany each activity. Ideas for related curriculum activities are also included. Eleven appendixes contain resource information and sample assessment forms for each chapter area. (SD)

Descriptors: Chemistry; Curriculum Development; *Early Childhood Education; Elementary School Science; *Kindergarten; Physics; *Science Activities; *Science Curriculum; Science Equipment; Science Experiments; Science Instruction; Science Projects

Identifiers: *Developmentally Appropriate Programs

ED414091 PS026108

Title: Science Education in Early Childhood (March 9-April 18, 1997). Report on Course.

Author Affiliation: Golda Meir Mount Carmel International Training Centre, Haifa (Israel).(BBB31856)

Pages: 61

Publication Date: April 1997

Sponsoring Agency: Israel Ministry of Foreign Affairs, Jerusalem. (BBE26969)

Available from: EDRS Price MF01/PC03 Plus Postage.

Document Type: Reports—Descriptive (141)

Geographic Source: Israel

Journal Announcement: RIEAPR1998

This document is a report on a 6-week course on science education in early childhood programs. Attending the conference in Israel were 30 participants representing 21 countries from Africa, Asia, Europe, and the Caribbean. Teaching methods included lectures, workshops, small group activities, professional study visits, and a re-entry workshop to assist participants in returning to their places of employment. Topics included in the course were: (1) the use of media; (2) a rationale for science education in preschool and kindergarten; (3) emotional, cognitive, and language development in early childhood; (4) the Matal Science Program; (5) case-based reasoning and thinking events; (6) making tools for understanding simple scientific concepts; (7) activities with plants; (8) effective communication with parents; (9) using birds to expand children's understanding of their proximal environment; and (10) gender and development. The course included field trips to kindergartens, a science and media center, and other educational settings. Participants also completed individual projects involving the integration of science into the daily early childhood curriculum, creating a kindergarten science curriculum, or using thinking events to teach science. Opportunities to visit holy and historical sites in Israel were arranged for the weekends. Course evaluation results indicated that participants were satisfied with the content and level of the course, valued the opportunity to meet colleagues from different cultures, and were pleased to visit the holy and historical sites of Israel. (Appendices include the list of participants, course schedule and materials, evaluation questionnaire, and the text of the closing ceremony speech made on behalf of the course participants.) (Author/KB)

Descriptors: Child Development; Course Evaluation; *Courses; *Early Childhood Education; Elementary School Curriculum; Foreign Countries; Kindergarten; Kindergarten Children; Parent Participation; Parent Teacher Cooperation; Preschool Children; Preschool Curriculum; Program Descriptions; *Science Education

ED428935 SE061010

Title: **Growing Together with the Treetures. Activity Guide. Series 1.**

Author(s): Schnell, Bobbi; Blau, Judith H.; Hinrichs, Jennifer Judd

Author Affiliation: National Tree Trust, Washington, DC.(BBB35470)

Pages: 65

Publication Date: 1997

Notes: Illustrated by Judith H. Blau.

Available from: EDRS Price MF01/PC03 Plus Postage.

Availability: National Tree Trust 1120 G Street NW, Suite 770, Washington, DC 20005.

Document Type: Guides—Classroom—Teacher (052)

Geographic Source: U.S.; District of Columbia

Journal Announcement: RJE AUG1999

Target Audience: Practitioners; Teachers

This activity guide is designed to be used with the Growing Together program. Tree-related activities are correlated to the Benchmarks for Scientific Literacy, the recommended standards for mathematics, science, and technology suggested by the American Association for the Advancement of

Science (AAAS). The Treasure Educational Program is dedicated to teaching children about the important role tree planting and tree care plays in keeping the environment healthy. Treasures are a community of small, imaginary tree characters who help relay the scientific concepts behind the growth and function of a tree. Learning the names and jobs of the Treasure characters helps reveal the functions of the tree and how each process is dependent on the other. The guide is divided into two sections. The first section is aimed primarily at students in pre-kindergarten through third grade. The second section is aimed at students in grades three through six. However, most of the activities are adaptable for children of all ages. (DDR)

Descriptors: Academic Standards; Biology; Early Childhood Education; Environmental Education; *Science Activities; *Science and Society; *Science Curriculum; Scientific Literacy; *Trees

ED416095 SE061148

Title: **Peck, Slither, and Slide.**

Author(s): MacDonald, Suse

Pages: 50

Publication Date: 1997

Notes: Accompanying separate "Teaching Guide," by Mary Lou Meerson.

ISBN: 0-15-200079-8

Available from: Document Not Available from EDRS.

Availability: Harcourt Brace and Company, 6277 Sea Harbor Drive, Orlando, FL 32887- 6777.

Document Type: Book (010); Guides—Classroom—Teacher (052)

Geographic Source: U.S.; Florida

Journal Announcement: RIEJUN1998

This picture book for young children features various animals matched with a verb conveying something about the animal's behavior. Each animal and its action verb are depicted in two illustrations that allow the viewer to solve a visual puzzle. Each illustration is labeled with only one word. The first picture shows a part of the animal and the action verb while the second picture shows the whole animal and its name. A glossary describes all of the depicted animals at length, including their size, habitat, diet, and behaviors. A separate teaching guide, designed to be used with the picture book, offers several activities to support and enhance the curriculum. The activities are divided into the areas of language arts, science, movement, and art. Sample science themes explored include camouflage, the five senses, and protection. Movement activities allow students to mimic such active verbs in the book as slither, reach, and swing. Art activities have students trying to use the "part to whole" style of drawing. Activities are divided into sections for younger and older children. A section is devoted to preparing students for reading the book and activating prior knowledge by having students list animals they have actually seen and having them demonstrate how each one moves. A section on related literature refers to specific animal themes in other books to reinforce lessons about the behaviors of the animals in this picture book. (PVD)

Descriptors: *Animals; Art Education; Early Childhood Education; Instructional Materials; Language Arts; Movement Education; Picture Books; Science Education; Teaching Guides; *Wildlife; *Zoology

ED414169 SE060843

Title: **Eggs Eggs Everywhere. Teacher's Guide. Preschool-1. LHS GEMS.**

Author(s): Echols, Jean C.; Hosoumc, Kimi; Kopp, Jaine

Author Affiliation: California Univ., Berkeley. Lawrence Hall of Science.(BBB11310)

Pages: 76

Publication Date: 1997

Report No: ISBN-0-912511-40-0

Available from: Document Not Available from EDRS.

Availability: GEMS, University of California-Berkeley, Lawrence Hall of Science, Berkeley, CA 94720-5200.

Document Type: Book (010); Guides—Classroom—Teacher (052)

Geographic Source: U.S.; California

Journal Announcement: RIEAPR1998

This book supports the National Science Education Standards by giving children an understanding of the characteristics of organisms, outlining the life cycles of organisms, and showing how organisms relate to their environments. Interweaving life science with literature, mathematics, and physical sciences, the unit begins with children participating in "The Chicken Drama," an activity which includes role playing chicks hatching out of eggs. In Activity 2, students begin with Ruth Heller's illustrated book, "Chickens Aren't the Only Ones," for a broad picture of the many animals that hatch from eggs. Students role-play the different animals that hatch from eggs and organize and compare animals by number of legs. As students sort, classify, and graph, they use logical thinking skills to organize data, use numbers in context, and make comparisons. Children also investigate animals that lay their eggs on land and in water. In Activity 3, students get acquainted with a live box turtle by observing, touching, and feeding it. They learn how turtles, fish, and snakes lay eggs, how the eggs hatch, and how the animals live in their environments. Activity 4 has children exploring the movement of plastic eggs and other objects on flat and inclined surfaces. (PVD)

Descriptors: Activity Units; *Animals; *Biological Sciences; Class Activities; Early Childhood Education; *Ecology; Habitats; Hands on Science; *Interdisciplinary Approach; Learning Activities; Mathematics Education; Models; Role Playing; Science Education; Teaching Guides; Thinking Skills

Identifiers: *Eggs

Journal Articles

EJ595634 PS529624

Title: **Conversational Science 101A: Talking It Up!**

Author(s): Owens, Caroline V.

Source: *Young Children*, v54 n5 p4-9 Sep 1999

Publication Date: 1999

ISSN: 0044-0728

Document Type: Guides—Classroom—Teacher (052); Journal articles

(080)

Journal Announcement: CIJMAY2000

Focuses on how to help children use everyday conversation to develop a scientific point of view by facilitating the interplay between experience and language. Argues that enhanced language skills enable children to better communicate their observations, draw conclusions from what they have observed, and discover patterns in their conclusions. (SD)

Descriptors: Communication Skills; Early Childhood Education; *Experience; Experiential Learning; *Language Role; *Language Skills; Learning Activities; Science Curriculum; *Science Education; Science Instruction; Scientific Methodology

Identifiers: *Conversation; *Conversational Learning

EJ593642 PS529549

Title: **Concepts of Science in the Early Years: Teachers' Perceptions towards a "Transformational Field."**

Author(s): Tsitouridou, Melpomeni.

Source: *European Early Childhood Education Research Journal*, v7 n1 p83-93 1999

Publication Date: 1999

ISSN: 1350-293X

Document Type: Journal articles (080); Reports—Research (143)

Journal Announcement: CIJAPR2000

Explored teachers' and student teachers' views of the framework of educational training in the area of science in early-childhood education. Found that scientific training was necessary to support the preschool curriculum; teachers have different tendencies in regard to scientific knowledge; and the cohesion between content knowledge and pedagogical processes is flexible and encourages flexibility in teacher perceptions. (LBT)

Descriptors: Early Childhood Education; Higher Education; Knowledge Base for Teaching; Preschool Curriculum; Preschool Teachers; *Science Education; *Student Attitudes; Student Teachers; *Teacher Attitudes; *Teacher Education

Identifiers: Science Skills

EJ582373 PS528965

Title: **Making the Connection! Science & Literacy.**

Author(s): Barclay, Kathy; Benelli, Cecelia; Schoon, Susan

Source: *Childhood Education*, v75 n3 p146-52 Spr 1999

Publication Date: 1999

ISSN: 0009-4056

Document Type: Guides—Classroom—Teacher (052); Journal articles (080)

Journal Announcement: CIJOCT1999

Discusses how, by taking advantage of naturally occurring events in the classroom and at home, adults can help young children acquire five important scientific processes: observing, comparing, classifying, measuring, and communicating. Stresses the importance of science-related children's literature as a component of the science curriculum, as well as a way to integrate science throughout the early-childhood curriculum. (TJQ)

Descriptors: *Childrens Literature; Curiosity; Early Childhood Education; Experiential Learning; *Interdisciplinary Approach; Science Activities; Science Curriculum; *Science Instruction; *Science Process Skills

EJ597692 PS529820

Title: **Talking with Children about Water.**

Source: *Texas Child Care*, v22 n2 p35-42 Fall 1998

Publication Date: 1998

ISSN: 1049-9466

Document Type: Guides—Classroom—Teacher (052); Journal articles (080); Reports—Descriptive (141)

Journal Announcement: CIJUN2000

Target Audience: Practitioners; Teachers

Notes that water can be an important medium for science, math, and language activities and how encouraging young children to think about water helps them understand important concepts about how the world works. Offers detailed instructions for 13 classroom activities that use water to demonstrate a variety of concepts. (TJQ)

Descriptors: Early Childhood Education; *Learning Activities; *Science Activities; *Science Experiments; *Science Instruction; *Scientific Concepts; *Water

Identifiers: Water Play

EJ574182 PS528486

Title: **Science Activities for Teachers and Families To Explore with Young Children.**

Author(s): Abdi, S. Wali; Freilich, Mark B.; Taylor, Satomi Izumi

Source: *Dimensions of Early Childhood*, v26 n3-4 p31-36 Sum-Fall 1998

Publication Date: 1998

ISSN: 1068-6177

Document Type: Guides—Non-classroom (055); Journal articles (080)

Journal Announcement: CIJUN1999

Describes science activities for preschool through primary-grade children, focusing on goals of science education, science processes, and characteristics of high-quality science activities. Notes that hands-on activities explore scientific concepts such as volume, gravity, heat conductivity, and condensation. (KB)

Descriptors: Early Childhood Education; *Hands On Science; Parents as Teachers; *Science Activities; *Science Education; Scientific Concepts; Young Children

EJ574096 PS528334

Title: **Young Children Investigating: Can a Constructivist Approach Help?**

Author(s): Nicholls, Gill

Source: *Early Child Development and Care*, v140 p85-93 Jan 1998

Publication Date: 1998

Notes: Special Issue on: "Constructivism in the Early Years."

ISSN: 0300-4430

Document Type: Journal articles (080); Opinion papers (120)

Journal Announcement: CIJUN1999

Argues that science investigation by young children should not be constrained by rigid curriculum frameworks, but be prompted by natural curiosity, as in the constructivist approach. Maintains that cognitive abilities in science and investigative skills will develop if children are encouraged to test their observations, questions, and hypotheses through constructing and reconstructing their scientific knowledge in a communication context. (JPB)

Descriptors: Classroom Environment; *Constructivism (Learning); Early Childhood Education; Educational Theories; *Learning Experience; Learning Processes; Learning Theories; *Science Instruction; Science Programs; *Scientific Attitudes; Scientific Literacy; Theory Practice Relationship

Identifiers: Social Constructivism

EJ574095 PS528333

Title: **"This is Nothing Like School": Discourse and the Social Environment as Key Components in Learning Science.**

Author(s): Watters, James J.; Diezmann, Carmel M.

Source: *Early Child Development and Care*, v140 p73-84 Jan 1998

Publication Date: 1998

Notes: Special Issue on: "Constructivism in the Early Years."

ISSN: 0300-4430

Document Type: Journal articles (080); Reports—Descriptive (141)

Journal Announcement: CIJUN1999

Describes a science enrichment program for 5- to 8-year-olds that used constructivist theory to create a social learning environment conducive to science learning. Considers the strategic actions and roles the teacher adopted to achieve theoretical objectives. Presents evidence that the children engaged in knowledge generation and critical reasoning in a classroom environment that emulates authentic scientific practice. (JPB)

Descriptors: Classroom Environment; *Constructivism (Learning); Early Childhood Education; *Educational Theories; Learning Experience; Learning Processes; Learning Theories; *Science Instruction; *Science Programs; Scientific Literacy; Theory Practice Relationship

Identifiers: Social Constructivism

EJ561606 PS527600

Title: **The "Epic of Evolution" Conference: Taking the Journey Back Home.**

Author(s): Allen, Kathleen; Leonard, Gerard

Source: *NAMTA Journal*, v23 n1 p140-44 Win 1998

Publication Date: 1998

Document Type: Journal articles (080); Speeches/meeting papers (150)

Journal Announcement: CIJSEP1998

Provides a summary of the presentations at the "Epic of Evolution" conference held by the American Association for the Advancement of Science (November 12-14, 1997). Describes the impact of the conference in relation to the work of Montessori and the work of Montessori teachers in scientific pursuits in the classroom. (SD)

Descriptors: *Creationism; Early Childhood Education; Educational History; *Evolution; *Montessori Method; Science Education; *Science

Education History; *Science History; Science Instruction
Identifiers: American Association for Advancement of Science;
*Montessori (Maria)

EJ559923 PS527583

Title: **Science and Young Children: The Message from the National Science Education Standards.**

Author(s): Rakow, Steven J.; Bell, Michael J.

Source: *Childhood Education*, v74 n3 p164-67 Spr 1998

Publication Date: 1998

ISSN: 0009-4056

Document Type: Guides—Non-classroom (055); Journal articles (080)

Journal Announcement: CIJ AUG1998

Discusses the "National Science Education Standards" released by the National Research Council in 1995, as it relates to teaching young children. Focuses on two areas: "Science Teaching Standards, how teachers should be facilitating scientific understanding in young children; and "Science Content Standards," what areas of understanding should be highlighted and made accessible as young children construct personal meaning. (EV)

Descriptors: *Academic Standards; Curriculum Design; *Early Childhood Education; Science Curriculum; *Science Instruction; Teaching Methods

Identifiers: *National Science Education Standards

EJ556131 SE558781

Title: **Children's Questions in the Classroom.**

Author(s): Watts, Mike; Barber, Brenda; Alsop, Steve

Source: *Primary Science Review*, n49 p6-8 Sep-Oct 1997

Publication Date: 1997

ISSN: 0269-2465

Document Type: Journal articles (080); Reports—Research (143)

Journal Announcement: CIJ MAY1998

Presents accounts from primary teachers as they worked toward fostering questioning. Techniques included providing good stimuli for questions, having students share thoughts in groups of increasing size, and modeling good questions and question-asking. (PVD)

Descriptors: Curiosity; Early Childhood Education; Elementary School Science; Foreign Countries; *Group Discussion; *Grouping (Instructional Purposes); Informal Assessment; *Inquiry; Learning Strategies; *Modeling (Psychology); *Questioning Techniques; Role Models; Science Instruction; Teaching Methods

Identifiers: United Kingdom

EJ556130 SE558780

Title: **Is How We Teach Science More Important Than What We Teach?**

Author(s): Solomon, Joan

Source: *Primary Science Review*, n49 p3-5 Sep-Oct 1997

Publication Date: 1997

ISSN: 0269-2465

Document Type: Journal articles (080); Opinion papers (120)

Journal Announcement: CIJMAY1998

Because children are in danger of losing their curiosity in adolescence, science teaching in primary school is of critical importance. Nurturing curiosity requires that the locus of control must reside with the learner. Instructional density (the amount of teaching) must not inhibit children's thinking and decision-making so as to remove the activity completely from the learner. (PVD)

Descriptors: Adolescents; Course Content; *Curiosity; Discovery Processes; *Early Childhood Education; Elementary School Science; Foreign Countries; *Inquiry; Learning Strategies; Primary Education; Relevance (Education); *Science Instruction; *Student Interests; Student Motivation; *Teaching Methods; Technology Education

Identifiers: United Kingdom

EJ552758 PS527091

Title: **Emergent Theories: Towards Signs of Early Science.**

Author(s): Watts, Mike

Source: *Early Child Development and Care*, v130 p59-73 Mar 1997

Publication Date: 1997

ISSN: 0300-4430

Document Type: Journal articles (080); Opinion papers (120)

Journal Announcement: CIJMAR1998

Examines science education in the United Kingdom for young children with special needs in science, and the theoretical underpinnings to children's early scientific experiences. Discusses methods of identifying young children with scientific aptitude. Examines use of children's early descriptions and explanations as emergent theorizing and use of emergent theorizing to guide diagnosis of early scientific ability. (Author/KB)

Descriptors: *Cognitive Development; *Evaluation; Foreign Countries; Gifted; National Curriculum; Preschool Education; Science Curriculum; *Science Education; *Science Instruction; *Scientific Concepts; Theories; *Young Children

Identifiers: *Science Ability; United Kingdom

EJ545032 PS526604

Title: **Beyond Homework: Science and Mathematics Backpacks.**

Author(s): Kokoski, Teresa M.; Patton, Mary Martin

Source: *Dimensions of Early Childhood*, v25 n2 p11-16 Spr 1997

Publication Date: 1997

ISSN: 1068-6177

Document Type: Guides—Non-classroom (055); Journal articles (080)

Journal Announcement: CIJOCT1997

Describes classroom-developed science and mathematics backpacks, self-contained educational packets developed around a theme or concept and designed to be completed at home. Presents generalized contents, a sample backpack on colors, and the backpack's advantages, including promotion of active learning, family involvement, curriculum integration, and positive science attitudes. (EV)

Descriptors: *Active Learning; Early Childhood Education; Family Involvement; *Homework; Learning Activities; *Mathematics Instruction;

Mathematics Materials; *Science Activities; Science Instruction; Science Materials

Identifiers: *Mathematics Activities

EJ544333 EA533423

Title: **Physics for First-Graders.**

Author(s): Hagerott, Steven G.

Source: *Phi Delta Kappan*, v78 n9 p717-20 May 1997

Publication Date: 1997

ISSN: 0031-7217

Document Type: Journal articles (080); Opinion papers (120)

Journal Announcement: CIJOCT1997

A Lockheed flight controls engineer describes how, as an undergraduate, he taught first graders basic lessons in physics and engineering by using slides, monkey bars, and other playground equipment to demonstrate principles like gravity, friction, force, and inertia. The children learned more about lift and gravity by constructing and flying paper airplanes. (MLH)

Descriptors: *Curiosity; *Grade 1; *Instructional Innovation; *Learning Activities; *Physics; Primary Education; *Science Education; Young Children

EJ536653 SE557136

Title: **Ponds and Technology.**

Author(s): Ferrell, Phyllis E.

Source: *Science and Children*, v34 n4 p37-39 Jan 1997

Publication Date: 1997

ISSN: 0036-8148

Document Type: Guides—Classroom—Teacher (052); Journal articles (080)

Journal Announcement: CIJ MAY1997

Describes a strategy that combines a field trip to a pond with technology such as digital cameras and educational software to help children expand their knowledge about ponds. Involves students sharing this new knowledge using computer writing and drawing tools. Lists science software resources and writing/drawing programs. (JRH)

Descriptors: Communications; Early Childhood Education; *Educational Strategies; *Educational Technology; *Field Trips; Science Activities; Science Instruction; Scientific Concepts; Teaching Methods

Identifiers: *Ponds



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New Publications

ERIC/EECE has published several new Digests and a new Resource List, the fall issue of its newsletter and the Internet parenting magazine *Parent News*, and a new Project Approach catalog.

ERIC Digests

- *Mathematics Standards for Pre-Kindergarten through Grade 2* by Kathy Richardson ([HTML](#) | [PDF](#))
- *K-12 Single-Sex Education: What Does the Research Say?* by Pamela Haag
- *The Role of Curriculum Models in Early Childhood Education* by Stacie G. Goffin ([HTML](#) | [PDF](#))
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Newsletters

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Books

Project Approach Catalog 3, edited by Judy Harris Helm

Digests, Resource Lists, and newsletters are available online and in print at no cost. *The Project Approach Catalog 3* is available for \$10 from the clearinghouse. (Contact: ERIC Clearinghouse on Elementary and Early Childhood Education, University of Illinois at Urbana-Champaign, Children's Research Center, 51 Gerty Drive, Champaign, IL 61820-7469; Tel: 800-583-4135 (Toll-Free), Tel: 217-333-1386; Fax: 217-333-3767; Catalog no. 224, \$10, plus \$1.50 shipping in U.S.; \$3 shipping elsewhere).

ERIC/EECE Web Sites

ECRP

Volume 2 number 2 of *ECRP* is a new addition to ERIC/EECE's Web sites. In this issue, see the article, "Readiness for School: A Survey of State Policies and Definitions," by Saluja, Scott-Little, and Clifford, for a feature new to *ECRP*, a searchable database of information discussed in the article. The article and the database address five questions school readiness of states in the United States.

ERIC/EECE

In the Reggio Emilia section of the ERIC/EECE Web site, information has been updated on the Reggio Emilia Contact Information page, especially with regard to Reggio Emilia Study Tours.

NCCIC

The National Child Care Information Center (NCCIC) is ERIC/EECE's Adjunct ERIC Clearinghouse on Child Care. A recent new development on the NCCIC Web site is the addition of a searchable database of information related to child care in the United States. This information can be searched by individual state (or states) or by one or more of the 10 U.S. Department of Health and Human Services regions. The information may also be searched according to one or more of these general categories: (1) Child Care and Development Fund (CCDF), (2) Temporary Assistance to Needy Families

(TANF), (3) State Demographics, (4) Child Care Licensing, (5) Program Enrollment and Participation, and (6) Professional Development.

You can find the NCCIC home page at: <http://nccic.org>

and the searchable database at:

<http://nautilus.outreach.uiuc.edu/eric/search.asp>

CLAS

The Web site of the Culturally and Linguistically Appropriate Services (CLAS) Early Childhood Institute, a Web partner of ERIC/EECE, was redesigned, to some extent graphically and to some extent organizationally. The feature for searching the collection of CLAS materials was improved to allow for additional functions. For example, there is now an indication as to which items returned from a search are available in full text or in excerpts.

Visit the CLAS Web site at: <http://clas.uiuc.edu>

The feature for searching the collection of CLAS materials is available at: <http://clas.uiuc.edu/search.html>

